PREDICTING EXTREME PERFORMERS ON THE JSE SECURITIES EXCHANGE

JONATHAN KORNIK

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Abstract

A number of studies have found that certain variables provide a better explanation of cross-sectional variation in share returns than beta. Most of these studies begin with a variable or set of variables in mind and consider whether any anomalous effect is associated with it. A small portion of literature takes the opposite approach: first the best and worst performing shares are isolated and then common traits between these stocks are investigated.

In this context, this thesis builds on the prior literature on extreme performance by Reinganum (1988), Glickman, DiRienzo and Ochman (2001), O'Neil (2002) and Dong, Duan and Jang (2003), where an extreme winner (loser) is a stock which at least doubles (halves) in a twelve month period. The research is conducted on the JSE Securities Exchange over the ten year period from January 1995 until December 2004. The dataset employed contains monthly data for 213 companies listed on this exchange, incorporating 7807 (5397) unique company months of extreme gain (loss). The data are adjusted for look-ahead bias but not survivorship bias.

After careful consideration of the literature, a set of 92 variables are derived for analysis. Each of these is lagged by one, three, six, nine and twelve months, creating a total set of 552 signals. These firm-specific attributes are divided into five categories: information variables, technical indicators, valuation measures, fundamental variables (including measures of profitability, performance, leverage, liquidity and efficiency) and industry position variables.

Those attributes which are different between extreme winners (losers) and non-winners (non-losers) are identified from the original 92 variables. The remaining 460 lagged variables are analyzed to deduce how winners (losers) evolve over time.

A stepwise median comparison test is developed which repeatedly adds the next-best filter (based on the significant variables from the previous tests) to a combination. By altering the parameters of this procedure a number of possible filter combinations are created. After evaluating each of these combinations with measures such as the Sharpe ratio, a final winner and a final loser filter combination are derived. The filters suggest that winners tend to have (1) high past earnings yield, (2) high past momentum, (3) low profit margins, (4) high return on assets, (5) low change in total assets, and (6) a low change in accounts receivable relative to sales. On the other hand, losers have (1) high market-to-book ratios, (2) low prices relative to past highs, (3) low earnings yields, (4) low sales relative to cash held, (5) low dividend yields and (6) are listed for shorter.

These filter combinations are tested on an independent sample and adjusted for risk using both the CAPM and a two-factor APT with the Resources and Financial-industrial indexes as the factors. It is found that the winner filter combination still earns a risk-adjusted abnormal return of almost 40 percent per annum, whereas the loser combination only earn out-of-sample significant abnormal returns at the 50 percent level. However, as the returns of the loser portfolio are negatively related to market returns, there may still be substantial potential for this portfolio in terms of achieving effective diversification. Both portfolios are found to be drawn predominantly from the Financial-industrial index. The winner portfolio is composed mainly of smaller shares, with high momentums and earnings yields, suggesting that there may be substantial sources of style-based risk not taken into account by the two-factor APT. On the other hand, no size or momentum bias exists in the loser portfolio although low earnings yield companies are most common.

Declaration

I, Jonathan Kornik, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree at this or any other University. I empower the University to reproduce for the purpose of research either the whole or any portion of the contents in any manner whatsoever.

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Introduction

1.1 Introduction

A great deal of literature has identified a number of anomalies in risk-adjusted returns. In general, this research begins with a particular firm-specific attribute in mind and considers whether different exposures to this factor result in abnormal returns. This thesis takes the reverse approach: it begins with the target companies in mind, and attempts to find common attributes among these companies.

Similar to Reinganum (1988), Glickman, DiRienzo and Ochman (2001), O'Neil (2002) and Dong, Duan and Jang (2003), the focus is placed on anomalous or outlier-companies: extreme performers. An extreme winner is defined as a company whose stock price at least doubles in a twelve month period, whereas an extreme loser is a company whose stock price at least halved over a similar length of time.

In addition to merely defining the individual characteristics of extreme performers, the thesis aims to derive filter rules[1] for isolating extreme performers. This research attempts to create filter combinations based not only on technical signals, but also on other fundamental and valuation attributes.

The study is conducted on the JSE Securities Exchange over the ten year period from January 1995 until December 2004. Data is primarily sourced from Datastream International. This data is subject to survivorship bias as the database used only contains currently listed companies. On the other hand, it is free from lookahead bias as the database is only updated once information becomes publicly available. Size

[1] Not to be confused with traditional filter rules, defined as a strategy that attempts to guide investors towards buying and selling patterns that will be profitable, usually created by analyzing historical price trends of a security. For example, "if the daily closing price of a particular security moves up at least *x* percent, buy and hold the security" (Fama and Blume, 1966).

restrictions have been placed on the included sample in order to minimize the effect of infrequent trading (Davis, 1994).

Only a limited amount of prior research has been conducted on the identification of extreme winners, with even less attention given to extreme losers. Furthermore, to the author's knowledge no published article has ever attempted this feat on the South African market. Therefore in order to conduct as comprehensive a study as possible, the paper considers numerous attributes derived both from the extreme performance literature and other, unrelated research.

According to Kennedy (2003) no variable should be included for consideration in a study unless there is some economic justification for its inclusion. Grinold and Kahn (1995) reiterate this point and indicate that potential factors should be chosen without consideration for the underlying data. If this is not done, the acquired results may simply be attributed to data snooping, causing the identified patterns to be due to pure chance and idiosyncrasies in the data, rather than underlying factors.

Therefore, only variables for which there is an economic rationale, as identified in past literature, are included in the study. Furthermore, in order to obtain a holistic view of the properties of extreme performers a wide variety of attributes are considered, including technical, valuation, performance, profitability, efficiency, liquidity, leverage and positional measures.

Another implication of the scarcity of research on the subject is that no one clear methodology has yet emerged as the optimal procedure for the identification of extreme performers. Therefore, after considering the methodologies of the prior research, the paper develops its own, unique procedure based on a stepwise framework for approaching this task.

The remainder of this chapter continues as follows: Section 1.2 provides motivation and objectives for this research. Section 1.3 outlines the contribution of the paper to the literature. Section 1.4 presents the structure of the thesis, and briefly summarizes the contents of each chapter.

1.2 Problem statement and objectives of this research

Firm-specific attributes such as financial ratios provide a great deal of insight to investors and other stakeholders regarding the prospects of a company. However, since the aim of most investors is to earn large excess returns after adjustment for risk, focusing on the attributes of all companies may be an indirect method of achieving this. A more direct technique would be to rather concentrate on the target companies and subsequently derive the common characteristics between these firms. The problem statement of this thesis is therefore whether filter rules can be derived to isolate extreme performers in a South African context.

In order to achieve this, the first objective of this research is to isolate those factors which differentiate extreme winners from all other shares. Similarly, the second objective is to identify factors which distinguish extreme losers from all other shares. These two objectives are achieved by contrasting the distributions and locations of different variables across these categories. Care is taken to ensure all assumptions of the statistical techniques employed are met.

Once the properties of extreme performers are revealed, a clear picture of the types of companies under consideration emerges. However, every identified attribute may not be a necessary condition for extreme performance. Furthermore, an exact screen for isolating these shares is not evident. The third and fourth objectives are therefore to derive filter combinations for the segregation of extreme winners and extreme losers respectively. This is achieved through the development of a unique stepwise median comparison procedure.

Finally, as mentioned earlier, investors are concerned with risk-adjusted returns rather than absolute returns. A strategy which earns exceptional returns through the identification of extreme performers may simply also have extremely large levels of risk commensurate with this return. The fifth and sixth objectives are therefore to consider whether the filter combinations derived lead to abnormal risk-adjusted returns in winners and losers respectively. Furthermore, since there may be other sources of risk not captured by the asset-pricing model used, the paper considers

exposures to other important style-based sources of risk as identified in a South African context.

1.3 Contribution

As mentioned earlier, to the author's knowledge no published paper has attempted to identify extreme performers on the South African market. Furthermore, only a limited amount of research has been conducted on this topic internationally. Therefore this thesis adds significantly to a relatively neglected area of research.

In addition, the primary methodology employed in the derivation of filter rules, the stepwise median comparison test, is a unique method which has been designed specifically for implementation in this context and has not appeared in any other extreme performance literature. A completely new angle on the identification of extreme performers is therefore developed. The concepts are also robust enough to be extended into other areas of research.

According to Fama (1991) three categories of market efficiency exist. These are (1) tests for return predictability, (2) event studies and (3) tests for private information. By attempting to predict extreme performers with the use of publicly available firm-specific variables, this paper focuses on the first category of tests. If extreme performers are able to be identified, the results will help to refute the Efficient Market Hypothesis (EMH), indicate a misspecification in the asset-pricing model used, or both.

A great deal of other research into this area of the EMH attempts to identify anomalies in order to disprove the existence of efficient markets. However, since these studies consider an entire market or large segment of the market, it is possible that noise in returns drowns out the effects of some of these factors. Since this paper focuses on extreme performers, the most anomalous of companies, a much less distorted presence of anomalies may emerge. The procedure may therefore highlight previously ignored potential sources of style-based risk.

Finally, if suitable combinations of filter rules can be derived, the model can be used to identify extreme performers, making it an invaluable tool for active portfolio management.

1.4 Thesis organisation

Chapter 2 provides a review of the literature relevant to this paper. It begins with an overview of relevant theory, focusing on the Efficient Market Hypothesis, the joint hypothesis problem and asset-pricing models. The chapter continues by considering past research on extreme performers, their findings and methodologies. An extensive overview of other potential variables from work outside the extreme performance spectrum is then discussed.

Chapter 3 introduces the data to be analyzed in the remainder of the thesis. It provides a overview of the dataset chosen and how this data has been controlled for various potential biases. It separates the data into an insample set for use in Chapters 5 to 7 and an independent set for use in Chapter 8. All extreme performers included in the sample are listed. The variables as derived from the literature and to be considered in this study are then named and categorized. Finally, the chapter provides an overview of the methodology to follow in the remainder of the paper.

Chapter 4 describes the data employed in detail. In addition to a basic statistical description of the data used, the chapter presents the data graphically in order to give the reader a greater understanding of the data and the adjustment for outliers. A great deal of attention is dedicated to the distributions of the various variables in order that violations of the assumptions of statistical techniques in later chapters can be identified. Since a number of similar variables are chosen for consideration, correlations between all variables are also investigated.

Chapter 5 begins the empirical testing by identifying those attributes which differentiate extreme performers from non-extreme performers. A number of possible statistical methods are considered before the chi-squared median test is chosen as the most appropriate to test for differences between medians of extreme and non-extreme

performers. Furthermore, the same test is used to reveal changes in the extreme performers in terms of each of the variables over time. The chapter then interprets the results of both the significant and the insignificant variables. Finally, a procedure for discarding perfectly correlated variables is implemented.

Using the results from the previous chapter, Chapter 6 attempts to derive an optimal combination of filter rules for the isolation of extreme winners. The stepwise median comparison procedure is derived and a number of tests are performed to optimise some of its parameters. The procedure is then conducted repeatedly, each time altering some of the remaining parameters, resulting in a number of potential filter combinations. The chapter concludes by evaluating each of these combinations and building an optimal winner filter combination. Chapter 7 applies a similar methodology in order to derive an optimal loser filter combination.

Chapter 8 tests the results of the preceding two chapters on an independent sample. The chapter considers not only the absolute returns, but also the risk-adjusted returns for each of the two resulting portfolios. The exposure of the portfolios to three style-based sources of risk (size, earnings yield and momentum) is considered.

Chapter 9 provides a summary and conclusion of the thesis. A number of possible areas for future research are suggested.

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Literature Review

2.1. Introduction

This chapter provides a review of the literature relevant to this thesis. Its purpose is not only to contextualize what is to come but also to provide insight into prior research. This is used to provide justification for the data and methodologies used later. In addition, it allows the findings of this thesis to evaluated and contrasted to that of other researchers.

This chapter continues as follows. Section 2.2 provides an overview of some theoretical issues central to this thesis. In particular, it briefly considers the Efficient Market Hypothesis, the joint hypothesis problem and evaluates various asset pricing models.

Section 2.3 then considers prior literature on the identification of extreme performers. Section 2.4 focuses on the findings of the extreme performance literature and documents other literature in which similar variables have found to be important. In addition, other potential signals which are cited in the literature, but are not previously found to be vital to extreme performance are reviewed. Finally, the section concludes and provides a summary of the chapter in Section 2.5.

2.2. Theoretical Overview

The section gives a brief overview of some of the theory applied in this thesis in order to provide a context for the research and testing to follow. It begins by considering the Efficient Market Hypothesis, one of the founding tenets of modern portfolio theory. Next it considers the problems of verifying market efficiency due to the presence of the joint hypothesis problem. Finally, the section reviews some asset pricing models

applied in the literature in order to conclude on the best available asset pricing model in a South African context.

2.2.1 The Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH) states that security prices fully reflect all publicly available information (Fama, 1991). Therefore any increase or decrease in stock prices is the result of an immediate response to new information. Since new information is unpredictable, stock prices should move unpredictably as well (Samuelson, 1965). In other words, stock prices are expected to follow a random walk.

Competition among investors to uncover new information which could generate higher investment returns is often cited as the source of this efficiency. Therefore, since emerging markets are analyzed less intensely, they are expected to be less efficiently priced.

Due to this variation in possible levels of efficiency Fama (1970) defines three categories of market efficiency that could apply in a particular market: (1) weak form; (2) semi-strong form; and (3) strong-form. Each of these implies a successively higher level of efficiency.

The weak-form hypothesis states that stock prices already reflect all security-market information such as historical prices, trading volume data and rates of return. Therefore under this hypothesis past stock prices have no relationship with future pices, implying that trend analysis is useless. The semi-strong form hypothesis states that the stock price adjusts quickly to all publicly available information regarding the prospects of a firm. Finally, the strong-form hypothesis states that stock prices reflect all firm-relevant information, even inside or private information. Under this last hypothesis no investors should be able to derive consistently above-average profits.

Fama (1991) redefines these categories based on the techniques with which it is possible exploit inefficiencies: "tests for return predictability", "event studies" and "tests for private information" respectively.

Since there is a cost involved in collecting information, investors will only utilize resources in acquiring information if it is worthwhile. In other words, information will be collected up until the point where the marginal benefit of the information equals the marginal cost of acquiring it (Grossman and Stiglitz, 1980). Therefore it is unlikely that all available information will be compounded into prices due to the presence of collection and transaction costs.

2.2.2 The Joint Hypothesis Problem

Much empirical work in finance has identified anomalies such as the small firm effect (Banz, 1981; Reinganum, 1981), the P/E-ratio effect (Basu, 1983), the dividend yield effect (Litzenberger and Ramaswany, 1979; Fama, 1991) and the market-to-book value effect (Plaistowe and Knight, 1986). These anomalies may suggest that the market is in fact inefficient.

However, an efficient market is defined as one in which expected returns perfectly reflect the inherent risk in those securities (Reilly and Brown, 2000). In order to estimate a fair expected return for an asset given its risk, an asset pricing model is needed such as the Capital Asset Pricing Model. Therefore the problem with this is that any test of market efficiency is implicitly also a test of the validity of the asset-pricing model used (Fama, 1991).

Identified anomalies could therefore either be caused by inefficiencies in the market or specification errors in the model of market equilibrium. This joint hypothesis problem has consequently caused much debate as to the source of these anomalies. What aggravates issues is that the difference in risk-adjusted returns attributed to the anomalies is frequently marginal enough to be put down to statistical biases in the data or techniques used.

2.2.3 Asset pricing models

There are many flaws with the traditional Capital Asset Pricing Model which have led many to conclude that anomalies are as a result of misspecifications in this model. Page (1986) finds that for studies using data from the JSE Securities Exchange, the two-factor Arbitrage Pricing Theory (APT) model is the best benchmark to use in measuring security price performance.

According to van Rensburg (1998), the APT is a more general theory that requires fewer restrictive assumptions than the CAPM. In addition, the strong mining-industrial dichotomy in the South African market strongly suggests using a two-factor model over a single-factor model such as the CAPM.

Van Rensburg also examines the choice between a two-index APT model and two single-factor models. He finds that the APT model is the better alternative as it provides all of the benefits of the two-SML approach in addition to dealing better with conglomerate companies with operations in both the mining and industrial sectors and with portfolios with shares in both sectors.

Limitations are introduced to its use however, as it can be difficult to identify the relevant factors. Van Rensburg therefore approaches this problem of factor identification from two directions – the factor analytic approach and the more economically interpretable prespecified variable approach. After extracting ten relevant macroeconomic factors that influence returns on the JSE, he finds that the Financial Industrial index (Findi) and the Resources index (Resi) explain most of the variation in the multifactor model.

Therefore a two-factor APT model with the Resi and the Findi as the factors is used to adjust for risk. In order to calculate excess returns, the three-month NCD rate is used as a proxy for the risk-free rate in terms of Firer and Mcleod (1999). The model is as follows:

$$E(r_p) = r_f + \beta_{RESI}(r_{RESI} - r_f) + \beta_{FINDI}(r_{FINDI} - r_f) \quad (2.1)$$

Where $E(r_p)$ is the expected annual return on the portfolio

r_f is the annual risk-free rate

r_{RESI} is the annual return on the resources index

r_{FINDI} is the annual return on the financial-industrial index

β_{RESI} is the sensitivity of portfolio returns to Resi returns

β_{FINDI} is the sensitivity of portfolio returns to Findi returns

In terms of the two-factor APT, all portfolio returns should be explained by the portfolio's systematic risk. Therefore any returns in excess of this are not explained by the portfolio's factor risk. Instead either the portfolio offers high risk-adjusted returns or the factors employed by the APT model do not fully capture the risk.

2.3. Identification of extreme stock performers

2.3.1 O'Neil and the "CAN SLIM" Strategy

Probably the most well-known research into predicting extreme stock performers comes from the founder of *Investor's Business Daily*, William O'Neil. In his book, "How to Make Money in Stocks" (2002), he outlines his CAN SLIM strategy – an acronym of the seven required factors to identify extreme performers. According to the American Association of Individual Investors (AAII) the "CAN SLIM approach has been one of the most consistent and strongest performing screens during both bull and bear markets" (Bajkowski, 2003).

William O'Neil & Co has been assembling a huge database with fundamental and price data on thousands of stocks since 1953. By picking out the 500 stocks which performed the best over forty year period from 1953 to 1993, and analyzing their characteristics he manages to identify seven common traits which these stocks display

before their large price appreciations. The seven characteristics central to the CAN SLIM strategy are outlined below (O' Neil, 2004):

C = Current Quarterly Earnings per Share

Although the big winners of the past 50 years displayed average quarterly earnings increases of 70 percent, this measure must be up at least 18 to 20 percent to be included in the portfolio. In addition, the current quarterly earnings must show accelerated growth. Such a measure would be difficult in a South African context as earnings figures are only published bi-annually.

The most reliable results are obtained when earnings increase consistently for five to seven consecutive quarters. These earnings increases also have a smaller implication if the growth is experienced on small last-period earnings. O'Neil therefore recommends that such securities should be ignored.

Interestingly, Price-to-earnings (P/E) ratios were found not to be a cause of extreme performance, but rather a result due to the large price appreciations and earnings growth experienced.

A = Annual Earning per Share

The securities should display an annual growth rate of at least 25 percent over the last three years. In addition, the annual pretax profit margin or the annual return on equity (ROE) should be expanding, with ROE at least 17 percent. Finally, consensus earnings estimates for the following year should also be up a reasonable amount.

N = Buy Stocks with Superior New Products, New Services, or New Management or Major New Improvements in Industry Conditions

Because these factors are difficult to measure, O'Neil uses technical analysis to identify relevant share price action. Share prices should be at or within 10 to 15 percent of price highs for the year. In addition, trading volume for the day should increase 50 percent or more above average daily trading volume.

O'Neil recommends that additional securities should be purchased if the price appreciates by a further 2 to 3 percent, but all purchasing should stop within 5 percent

of the buy price. To limit losses, all holdings of the security should be sold if the price falls more than 7 percent below the original purchase price.

Domash (2004) who creates a portfolio investment strategy based on O'Neil's CAN SLIM strategy and recommends buying a security if it is above 90 percent of its 52 week high and above 80 percent of its five year high.

S = Supply and Demand

According to O'Neil, since stock prices are a function of supply and demand, investors should focus on those shares where demand is likely to exceed supply and cause price appreciation. Therefore he recommends investing in companies with less than 25 million shares outstanding. Careful attention should also be paid to the demand side, by monitoring changes in daily volumes traded.

He also recommends that smaller-capitalization stocks should be avoided if possible as these securities are much more volatile. Instead, he recommends focusing on firms with management ownership or undertaking share buy-backs.

L = Leaders or Laggards

O'Neil recommends purchasing the top two or three stocks in an industry. The 12 month relative strength ratio should be at least 70, although better results are obtained when relative strength ratios of above 80 are the benchmark. A 12 month relative strength ratio of 80 means that the stock has outperformed 80 percent of all stocks during the past 12 months.

In addition, the company should be rated top of its industry or field in terms of annual earnings growth, sales growth, pretax and after-tax profit margin, return on equity and product quality. This ensures that only those companies with sound fundamentals are invested in.

I = Institutional Sponsorship

Since institutional investors perform a great deal of research before investing in stocks, and have the greatest ability to influence the stock price, O'Neil recommends securities with a certain degree of institutional ownership. He says that a potential buy

should have at least 25 institutional owners and this number should have increased over the last several quarters.

According to Domash (2004) since institutional investors can be responsible for most of the price appreciation of a security it is important to invest in a company before it is too popular amongst these investors. He recommends purchasing securities with at least 5 percent institutional ownership to ensure that some of the more informed investors agree with your evaluation of the company. Institutional ownership should also be less than 35% to ensure that there is still potential for price appreciation.

M = Market Direction

According to O'Neil, the securities identified should be avoided in a weak market. He recommends technical analysis of index charts to identify if the market is in an up- or downtrend. According to Domash (2004), the market is probably in a downtrend if it is trading below its 200-day moving average.

O'Neil's books publish only his results and findings. There is no evidence of his methodology or empirical analysis. It is therefore important to examine published papers on the same topics to see whether similar results are obtained.

2.3.2 Reinganum (1988)

Reinganum conducts a similar study documented in his 1988 paper "The Anatomy of a Stock Market Winner". He examines the characteristics of 222 stocks that at least doubled in price during the period between 1970 and 1983. The study is closely linked to the findings of O'Neil (2002) as Reinganum makes use of data supplied by William O'Neil and Co. Because securities with prices less than $10 are excluded from the study to limit the sample, caution must be taken in applying his results to cheaper securities.

Reinganum decomposes the sample "winners" into nine groups based on the magnitude of their extreme performance. The paper then explicitly contrasts the characteristics of each stratum of the identified "winners" in order to identify the

common properties of these shares. The comparison is conducted in the buy and sell quarters as well as in the eight quarters immediately preceding the buy signal. He classifies each of the variables obtained from O'Neil's files into one of five categories.

The "smart money" variables look at identifying the investment patterns of professionally managed investment funds and corporate insiders. Reinganum finds that the most pronounced changes come from investment advisers rather than banks, mutual funds and insurance companies and so his study focuses on that group. He looks at the number of institutions holding a particular issue as well as the aggregate holdings of institutions as a percentage of outstanding common stock. These variables are examined in the buy and sell quarters as well as in the eight quarters preceding the buy signal.

Reinganum finds a dramatic increase in both these "smart money" measures between the buy and sell quarters. He also finds that investment advisers only invest after the price appreciation starts and so this is not a good leading indicator. He finds, on the other hand, that corporate insider trading may predict future price changes. Further research into this point is outlined later in this review. He concludes, however, that well-informed investors do not accurately predict major price advances.

Secondly, valuation measures are examined. He finds that low P/E ratios, small market capitalization and high betas are not necessary conditions for future extreme performance. He does find, however, that most winners have a price-to-book ratio of less than unity in the buy quarter and so an investment strategy should isolate firms that sell below book value.

Thirdly, Reinganum considers technical indicators. He finds that most winners possess relative strength ratios of at least 70 where relative strength is a weighted average of quarterly performance of the previous year. He also finds a large increase in relative strength in the quarter preceding the buy quarter.

Fourthly, he investigates fundamental earnings and profitability measures. Like O'Neil he finds positive pretax profit margins, quarterly earnings acceleration,

quarterly sales acceleration and positive 5-year quarterly earnings growth rates contribute to the likelihood of being a "winner".

Finally he looks at miscellaneous measures. Reinganum finds that winners generally have less than 20 million shares outstanding. He finds that this number nearly doubles in the sell quarter due to stock splits and other actions. He also finds that most stock prices are within 15 percent of the firm's two-year high indicating that a contrarian strategy would not identify these stocks. These results are similar to those of O'Neil (2004).

Reinganum then applies his findings to an out-of-sample group of stocks. Firstly, he uses all nine identified signals and then only the four strongest signals. He finds that both strategies earn abnormal returns although the first earns higher returns. This indicates that the other five signals are not redundant.

2.3.3 Glickman, DiRienzo and Ochman (2001)

Glickman, DiRienzo and Ochman (2001) take this analysis one step further by not only attempting to predict extreme "winners" (the top 2.5% of shares) but also extreme "losers" (the bottom 2.5% of shares). Short selling these extreme losers can be used to enhance portfolio performance. Their study is based on stocks in the Russell 1000 and 2000 in the period from 1992 to 2000.

They identify these extreme performers in a two-step process. Firstly, they consider technical signals, forward looking analyst variables, valuation signals and fundamental signals to identify those traits which are common between winners and losers but not other shares. After using these characteristics to earmark potential extreme performers they carefully consider technical indicators and fundamental signals in order to separate these extreme performers into winners and losers. After identifying the relevant properties, a logistic regression is conducted in order to determine a probability function for winners and losers.

Glickman et al find that their winners (termed "rockets") display higher daily volatility over the preceding three months, higher past trading volume, smaller market capitalizations and larger long-term growth rates. In addition, these firms are more likely to be younger and report a loss or sales decline in the previous four quarters. This suggests a more contrarian strategy than Reinganum and O'Neil to identifying extreme winners.

On the other hand, the losers (termed "torpedoes") have higher positive accruals, more negative cash flows from operations, more receivables, a greater likelihood of experiencing a decline in asset turnover from the previous year, lower returns over the prior year and higher returns over the period from three years ago until one year ago. This once again implies a reversal effect of previous winners becoming losers. The findings could be consistent with the theories of overreaction and correction or mean reversion discussed later.

The value in a study such as this one, according to Glickman et al, is firstly that it can help to flag extreme performers so that investors can recheck their intuition behind purchasing these potentially extreme movers. Secondly, it can also be used in developing "high octane" alpha strategies by focusing on alpha stocks with a high probability of extreme performance.

2.3.4 Dong, Duan and Jang (2003)

Dong, Duan and Jang (2003) develop the Glickman et al paper further by applying a neural network model in the identification of extreme performers. They apply both a linear probit model and a non-linear neural network model and find that the latter can predict extreme performers just as well while using under a third of the explanatory variables.

A neural network is a graph modelled after the human brain, in which several interconnected elements process information simultaneously through a variety of mathematical functions, adapting and learning from past patterns (American Heritage

Dictionary, 2004). Neural networks can better deal with and model complex interactions among data.

Dong et al conduct their study on 68 933 datapoints obtained from the Compustat and CRSP databases over an undisclosed period. They discard records with prices below five dollars or with missing explanatory variables. Extreme performers are defined as those securities in the top and bottom two percent in terms of performance. They find that extreme winners are more likely to be smaller, higher in price, younger and losing revenue and sales.

The advantage of the Dong et al methodology is that fewer explanatory variables are needed to create a model with the same predictive power. This means less data collection is needed and fewer observations have to be discarded due to missing data. According to Dong et al, since the data used is non-linear, a non-linear model such as neural networks creates the best representation.

2.3.5 Tunstall, Stein and Carris (2004)

Tunstall, Stein and Carris (2004) conduct a study on the JSE Securities Exchange from 1994 to 2004. The data is divided into two samples alphabetically – those with names beginning with the letters A to M and those beginning with the letters N to Z. All tests of attributes of extreme performers are conducted on the first subsample. The second subsample is reserved for determining whether the earlier-identified attributes are robust enough to predict extreme performance in an independent sample.

They begin by filtering all stocks in the first subsample to find both the extreme winners (those that have returned greater than 100 percent over a 12 month period) and the extreme losers (those that have declined in value by at least 50% over the preceding twelve months).

They ignore stocks priced below fifty cents to minimize the problems associated with liquidity. In addition, multiple stock instances within a 12 month period are eliminated.

By examining prior research Tunstall et al identify attributes which may be common to these extreme performers. They then collect data relating to these attributes and compare whether there is any significant difference between the extreme performers and the control group (comprising all other stocks).

They find that winners have small market capitalisations, low market-to-book values, low earnings growth, low returns on equity and low forecast earnings growth. Losers, on the other hand, are found to have high prior 12-month momentums, high market-to-book values, low dividend yields, relatively high standard deviations, low payout ratios and high capital gearing.

Based on these findings, they form screens for predicting extreme performers. By applying these screens to the second subsample and assuming a fixed holding period of twelve months, they find that their chosen portfolio appears to outperform the market, particularly when short-selling is possible. They do not, however, make an explicit risk-adjustment in order to substantiate their claim. In addition, they do not consider the implications of transaction costs or margins on short-sales.

2.4 Potential Signals

Many variables are identified in the previous section which prior studies find to be important in predicting extreme stock performance. This section of the review continues by more closely examining previous work on these and other variables in order to more accurately determine their predictive power. In addition, further indicators identified as affecting security prices are examined.

2.4.1 Insider Trading

Reinganum (1988) cites insider trading as a factor which may be able to be used to predict extreme winners. Much conflicting research has been done into the predictive power of insider trading patterns.

For example, Rogoff (1964) finds that where three or more insiders buy their company's stock and no insiders sell in a given month, returns to insiders over the next six months are almost ten percent greater. Lorie and Niederhoffer (1968) find evidence that insiders can predict price movements in their own securities as much as six months in the future. Finnerty (1976) also finds evidence that insiders earn significant abnormal profits by trading securities of their own firms. On the other hand, Driscoll (1956) and Wu (1963) find no evidence of successful forecasting by insiders.

In order to add further evidence to this debate, Jaffe (1974) examines the predictive power of insiders in a sample which avoids small firm bias and takes the effect of transaction costs on profitability of portfolios into account. His results suggest that insiders do possess and exploit special information.

Interestingly, he finds that large transactions by insiders do not contain more information than smaller transactions. Similarly, intense trading activity is not reliant on more special information than less intense trading. These results suggest that all insider transactions have exploitable information content.

He does find, however, that transaction costs reduce profits by forty percent. In fact, after adjusting for these costs, only intensive trading samples with eight month holding periods earn statistically large returns.

In a more recent paper Seyhun (1986) tackles the finding that uninformed outsiders can earn abnormal profits by mimicking insiders based on publicly available information. He explores two potential explanations for this contradiction of the EMH. Firstly, CAPM may result in potential biases in measuring expected returns to securities. Secondly, the papers may have assumed that public information is available earlier than it actually is, resulting in lookahead bias.

His empirical results show that if insiders purchase a security prior to the public release of favourable information, the purchase is followed by positive abnormal returns. Conversely, if insiders refrain from purchasing stock until after the release of

unfavourable information, the purchase is preceded by negative abnormal returns. He also finds that smaller firms earn larger abnormal insider profits. In addition, insiders who are more familiar with the overall operations of the firm trade on more valuable information.

Seyhun finds that the possession of inside information has an effect on the bid-ask spread. The bid-ask spread is higher if informed traders possess more valuable information when they trade and where informed traders account for a greater proportion of overall trading volume. This occurs in order to reward security dealers for making a market in securities where there is information asymmetry.

Using this information, together with the inverse relationship between firm size and relative bid-ask spread of Stoll and Whaley (1983) which is discussed later, Seyhun finds that following the public dissemination of insider trading information, outsiders cannot earn abnormal profits net of trading costs.

2.4.2 Fundamental Analysis

All of the studies on identifying extreme performers rely to some degree on fundamental variables for their predictive power. A great deal of research has been done on fundamental analysis and its relationship with stock prices. This research implicitly relates back to the EMH, as under semi-strong form efficiency (Fama, 1970) no abnormal returns would be possible using a fundamental analysis strategy such as event studies (Fama, 1991).

Ball and Brown (1968) find that of all the information about an individual firm which becomes available during a year, one-half or more is captured in that year's income number. The annual income report does not rate highly as a timely medium, however, as 85 to 90 percent is captured in more prompt media.

McNichols and Wilson (1988) investigate the reliability of financial statements by looking for evidence of earnings management, with a focus on the provision for doubtful debts. They do find evidence of earnings management and attribute this

finding to two explanations. Firstly, managers desire to smooth income in order to portray a more reliable, sustainable economic situation to investors. Secondly, managers whose compensation plans have lower bounds have an incentive to minimize earnings when their plans are out-of-the-money so that earnings can be maximized in later years in order to maximize compensation. These findings suggest that care must be taken when attempting to use accounting numbers to gauge the true economic situation in a firm.

In their much cited paper, Ou and Penman (1989) perform financial statement analysis that first identifies a large set of financial statement items that affect one-year-ahead earnings changes and then combine these into one summary measure. According to the paper, the ability to use current accounting data to predict future earnings changes is due to the stock prices deviating at times from fundamental values and only slowly gravitating back.

Ou and Penman's model aims only to predict the direction of the one-year-ahead earnings change. The model is built conservatively and in such a way as to minimize lookahead bias and statistical overfitting and ensure robustness. They look at the correlations between a large number of financial statement attributes and future earnings, ignoring experience and economic sense in choosing these variables. This procedure is criticized in later research on the grounds of data snooping (Lev and Thiagarajan, 1993).

They investigate 68 descriptors of which 28 are found to be significant. Using these variables, Ou and Penman provide evidence that financial statements capture fundamentals that are not reflected in prices.

A number of papers have attempted to economically justify the inclusion of variables in their models. For example, Lev and Thiagarajan (1993) also attempt to investigate the predictive power of fundamental variables. Unlike Ou and Penman, however, they estimate the value-relevance of a set of financial variables which are claimed to be useful in security valuation by analysts.

Using the same variables as Lev and Thiagarajan, Abarbnell and Bushee (1997) find that analysts forecast revisions fail to take all of the information about future earnings contained in the fundamental signals into account.

Abarbnell and Bushee (1998) take this analysis one step further by investigating whether the application of fundamental analysis yields significant abnormal returns. They find that abnormal returns associated with one-year-ahead earnings changes are significant. In addition, the findings argue against risk as a complete explanation for the abnormal returns observed.

Since a sizeable portion of the abnormal return is derived from larger firms, small firm bias is not an issue and the strategy can be exploited without exerting too much price pressure from trading. Short-sale restrictions would also not preclude the ability to earn profits, lending further evidence to the applicability of the strategy in the real world.

The variables identified as having predictive power are outlined below:

2.4.2.1 Inventory

Inventory increases that outrun cost of sales increases are considered to be a negative signal. This may indicate a difficulty in generating sales or the existence of slow-moving or obsolete items that may be written off in the future. Earnings are expected to decline as management attempts to get rid of excess inventory (Lev and Thiagarajan, 1993).

However, these inventory signals are only significant where inventory represents a substantial investment such as in the manufacturing and primary production sectors (Abarbnell and Bushee, 1997).

2.4.2.2 Accounts Receivable

An increase in accounts receivable may also convey a negative signal as this may indicate a difficulty in selling products, necessitating credit extensions. This is likely to result in future earnings decreases as receivables provisions increase to cover this increasing debtors-base (Lev and Thiagarajan, 1993).

Abarbnell and Bushee (1997) find that the accounts receivable signal is only significant when the firm experiences an earnings increase relative to the prior year and not when it experiences an earnings decline. In addition, accounts receivable is more significant in high inflation years as the carrying costs are higher during these inflationary periods. This is a particularly important implication in the South African context, with its periods of high inflation.

2.4.2.3 Intangibles

Since capital expenditure is discretionary, a decrease may signal that management is worried about current and future cash flows to sustain previous investment levels. Therefore a decrease in the firm's capital expenditure relative to the industry is expected to be inversely related to returns (Lev and Thiagarajan, 1993).

Abarbnell and Bushee (1997) only find this result in low P/E-ratio shares. Therefore they conclude that capital expenditure in excess of the industry average is only perceived negatively for firms without expected earnings growth.

Choi, Kwon and Lobo (2000) investigate the effect of reported intangibles and their amortization on market valuation of a firm in more detail. Valuation models indicate that the value of an asset will approach zero as the level of uncertainty in its future economic benefits approaches infinity. As intangibles involve a degree of uncertainty by definition, the extent to which they are brought into market valuations has been debated.

Amir, Harris and Venuti (1993), Chauvin and Hirschey (1994) and McCarthy and Schneider (1995) report a significant positive relationship between goodwill and the market value of a firm. Jennings, Robinson, Thompson and Duvall (1996) find little evidence between goodwill amortization and a firm's market value.

Choi, Kwon and Lobo's (2000) findings support the hypothesis that intangibles are positively valued by financial markets. They also find that there is no significant relationship between amortization expense and firm return. Similarly, Lev and

Thiagarajan (1993) find that another income statement item, research and development expenditure, is also not related to changes in security returns.

2.4.2.4 Gross Margin

A disproportionate decrease in gross margin to sales is viewed negatively by analysts (Lev and Thiagarajan, 1993). However, this is only significant if the firm experienced an earnings decline from the prior year (Abarbnell and Bushee, 1997). In addition, the gross margin signal is expected to be most important in sectors where margins are thin or in periods of high inflation where the ability to deal with increasing input prices is more important.

2.4.2.5 Selling and Administrative Expenses

A disproportionate increase in selling and administrative expenses is viewed negatively as it may be an indication of a loss of managerial cost control or an unusual sales effort (Lev and Thiagarajan, 1993). As with gross margin, this variable is only significant when the firm experiences an earnings decline from the prior year (Abarbnell and Bushee, 1997).

2.4.2.6 Effective Tax Rate

An unusual decrease in the firm's effective tax rate is considered by analysts to be a negative signal about earnings persistence (Lev and Thiagarajan, 1993).

2.4.2.7 Order Backlog

Order backlog is defined as the amount of unfulfilled orders at year-end. A decrease in the backlog relative to current operations (indicated by sales) may indicate that unrealized sales were recorded in the current period. This implies an expected future decrease in earnings (Lev and Thiagarajan, 1993).

2.4.2.8 Labour force

Generally corporate restructuring, particularly labour force reductions, are looked on positively by analysts (Lev and Thiagarajan, 1993).

2.4.2.9 Audit qualifications

Lev and Thiagarajan (1993) find that audit qualifications are only a statistically significant signal to investors in a subsample of their data.

2.4.3 Market-to-Book Value

Reinganum (1988) finds that most winners have book values exceeding their market values resulting in a market-to-book value less than unity. Plaistowe and Knight (1986) aim to determine whether a premium or discount to book value is a significant indicator for future firm performance on JSE Securities Exchange.

Their results show a statistically significant difference in the performance of premium and discount portfolios indicating that market-to-book value does predict firm performance. In addition, premium and discount portfolios earn significantly different returns to the portfolio of all firms.

Plaistowe and Knight attribute this anomaly to a number of possible sources. It may be caused by market inefficiency, implying that it can be exploited to earn abnormal returns. Alternatively, it could be due either to non-stationarity of distributions or neglected variables in the risk-estimation model. This would imply that the anomaly is not exploitable.

Fama and French (1992) also identified book-to-market ratio as having significant power in explaining the cross-section of returns. Fama and French (1996) show that this and size contain elements of risk not captured by the traditional CAPM. In fact, when a three factor model using excess return on the market, excess return to small firms, and excess return on high book-to-market stocks as the factors all other anomalies disappear.

Similarly, Davis (1994) finds that book-to-market equity significantly explains the cross-section of returns even after controlling for survivorship and look-ahead biases and biases introduced by infrequent trading and the bid-ask spread. He does, however,

find two other factors, earnings yield and cash flow yield, are also important in explaining the cross-section of returns.

2.4.4 Momentum

All of the extreme performance papers reviewed above rely to some degree on past returns in predicting future performance. If momentum can be used to predict future returns it would imply that not even weak-form efficiency (Fama, 1970) would hold as technical strategies would be profitable. There is therefore a large body of conflicting evidence on this topic.

For example, Latane and Jones (1979) look at the informational content of quarterly earnings reports and the effects of the information on security prices. They find that unexpected earnings are very significantly related to excess holding period returns and the adjustments to unexpected earnings are relatively slow. They find that this delayed adjustment is not as significant for stocks more closely followed by analysts. This seems to suggest that the strength of the EMH applies to different stocks with different magnitudes.

Bernard and Thomas (1989) investigate the post-earnings announcement drift first identified by Ball and Brown (1968). They consider three possible explanations for the phenomenon. The first is that traders fail to assimilate available information or it is too costly to do so. Secondly, the CAPM may be misspecified and researchers fail to adjust raw returns fully for risk. Finally, prices may be affected by investors who fail to recognize fully the implications of current earnings for future earnings.

Their results do not seem to support a CAPM misspecification and find no evidence of the exclusion of risk factors other than systematic risk. In addition, even though the drift magnitude is bounded within total transaction costs, there is still some evidence that suggests transaction costs is not the reason. They therefore conclude that investors do not fully take into account the implications of current on future earnings.

Fama and French (1988) find that slowly mean-reverting components of stock prices tend to induce negative autocorrelation in returns. They find that autocorrelations become negative for two year returns, reach minimum values for three to five year returns, and then move back to zero for longer term horizons. This autocorrelation is so severe in fact that it is found to explain about 40 percent of three to five year return variances for portfolios of small firms and 25 percent for portfolios of large firms. They do mention, however, that their results may be less applicable after 1940.

However, in a more recent study sample, Lo and MacKinley (1988) strongly reject the random walk model for the period 1962 until 1985. In this study they find significant positive serial correlation for weekly and monthly holding period returns.

Smaller capitalization stocks trade less frequently than their larger counterparts. Therefore new information is impounded first into the larger stocks' prices and then into the smaller stocks' prices with a lag. This lag induces positive serial correlation, especially in an equally-weighted index where a disproportionate weight is given to small capitalization stocks. However, after controlling for the effect of small firms and infrequent trading, Lo and MacKinley (1988) still find evidence of positive serial correlation and conclude that it therefore cannot be attributed completely to infrequent trading or time-varying volatilities.

Following on from Fama and French (1988) and Lo and MacKinley (1988), Jegadeesh (1990) finds significant negative first-order serial correlation in monthly stock returns. Significant positive serial correlation is found at longer lags with twelve month serial correlation being particularly strong.

He investigates whether this finding can be attributed to the January effect identified by Branch (1977) and Reinganum (1983). Although "losers" in the previous year do experience abnormally high returns in January, the pattern of serial correlation outside this month appears to be significant and similar across all size-based quintiles. In addition, the serial correlation is not confined to any isolated subperiod within the sample, indicating more robust results than Fama and French (1988).

DeBondt and Thaler (1985) bring in aspects of behavioural finance in order to explain these findings. They find that people tend to "overreact" to unexpected and dramatic news events or earnings announcements. According to their work, individuals tend to overweight recent information and underweight prior data, leading to overreaction.

They hypothesize that extreme movements in stock prices will be followed by a subsequent price correction in the opposite direction. In addition, the more extreme the overreaction, the more substantial the subsequent adjustment will be.

They find that "loser" portfolios do outperform the market on average and "winner" portfolios do underperform it. The overreaction phenomenon occurs mostly during the second and third years of the test period, corresponding with the holding periods where the most significant serial correlation is found by Fama and French (1988).

In another behavioural study, Griffin and Tversky (1992) show that people focus on the strength or extremeness of news with insufficient consideration for its weight. They therefore predict that overconfidence will result when the strength of evidence is high but its weight is low. An example of this would be an overreaction to an unexpected positive earnings announcement.

Lo and MacKinley (1990) show, however, that overreaction leading to negative autocorrelation in security returns is not the only explanation for abnormal profits to contrarian strategies of buying losers and selling winners. According to them, if stocks are positively cross-correlated a similar result will be obtained. Such a scenario would be present if a higher return for stock "A" today implies a higher return for stock "B" tomorrow.

The paper suggests that such a positive cross-correlation does exist in security returns. This is because returns of large-capitalization stocks almost always lead those of small-capitalization stocks due to "nonsynchronous" or "thin" trading where information is impounded first into the more traded and generally larger securities.

They conclude that although there is a negative serial correlation in individual stock returns, less than fifty percent of expected profits from a contrarian investment rule

may be attributed to overreaction. The majority of the profits stem, in fact, from the cross-correlation between securities.

In response to this paper, Jegadeesh and Titman (1993) argue that if stock prices either overreact or underreact to information then profitable trading strategies that select stocks based on their past returns will exist. They find that such a trading strategy generates significant positive returns over three to twelve month holding periods, with negative abnormal returns starting around twelve months and continuing up until the 31st month.

It is shown that past-winners realize consistently higher returns than past-losers for the seven months following the portfolio formation date and past-losers earn consistently higher returns for the subsequent thirteen months. This indicates a clear pattern of overreaction and correction. This effect is so strong, in fact, that it persists even after taking transaction costs into account.

Jegadeesh and Titman therefore conclude that their results cannot be attributed to the lead-lag effect of Lo and MacKinley (1990) and are rather a consequence of a delayed stock price reaction to firm-specific information.

Chan, Jegadeesh and Lakonishok (1996) further analyse these momentum strategies identified in earlier work. They find that past return and past earnings surprises each predict large drifts in future returns. According to the paper, this finding cannot be attributed to market risk, size or book-to-market effects but rather suggests that the market responds slowly to new information.

They find that analysts' forecasts initially tend to be overly optimistic and are then adjusted down over time. This may be due to analysts' incentives to generate brokerage fees by encouraging buy transactions. In addition, analysts are especially slow in revising their estimates in the case of companies with the worst performance.

In his attempt to identify the style factors that explain the expected returns of industrial shares on the JSE Securities Exchange, van Rensburg (2001) finds

momentum to be a significant factor. In fact portfolios formed based on three, six, twelve and 24 month momentum outperform the market.

Applying a cluster analysis to all identified style factors, van Rensburg extracts the three most influential factors. These include 12-month positive momentum as well as earnings yield as a measure of value and market capitalization as a measure of quality. He concludes that at least for industrial shares on the JSE Securities Exchange these three sources of style-based risk need to be taken into account.

2.4.5 Size

Although Reinganum (1988) finds that size is not an influential factor in predicting extreme winners, Glickman et al (2001) do find it to be important. These opposing findings are typical of the literature of the effect of size on market returns. Many researchers have identified a small-firm effect where smaller-capitalization firms earn higher risk-adjusted returns than their larger counterparts. Some use this finding to refute the efficient market hypothesis while others use it as proof of misspecification of the CAPM – once again the joint hypothesis problem is in play. These arguments are outlined below.

Hall and Weiss (1967) find that firm size tends to affect the profitability of firms. In particular he finds that significant capital requirements in large firms acts as a barrier to entry and in so doing greatly affects profit rates. They also find that investors may be unjustifiably reluctant to invest in small firms.

Banz (1981) looks at security returns rather than profitability within firms. He finds that smaller firms have higher risk adjusted returns than larger firms on average. It is not known whether size itself matters or whether this is only a proxy for some unknown risk factor which is correlated with market value and is not taken into account by the CAPM.

He finds that Price-Earnings (P/E) effect (discussed below) is a proxy for the size effect and not vice versa. Finally, he concludes that his evidence suggests that the CAPM is in fact misspecified.

Reinganum (1981) conducts a similar study in an attempt to solve the joint hypothesis problem. Since abnormal returns from the size and P/E effects persist for at least two years, Reinganum argues that market inefficiency is an unlikely explanation as markets would not take this long to eliminate the anomaly.

Like Banz (1981), Reinganum finds that the P/E effect does not emerge after controlling for the size effect, indicating that the size effect subsumes the P/E effect. He therefore concludes that the two anomalies, but the size effect in particular, seem to be related to the same set of missing factors.

Roll (1981) attempts to further explain the existence of this anomaly. Since equally-weighted indexes are more heavily weighted in small firms than value-weighted indexes, he compares these two in order to study the small firm effect. He finds that the equally-weighted index displays much more positive autocorrelation, causing a greater downward bias in the daily returns' variances.

If a period passes in which no trade is made (which is more likely for small firms), the return which is implied for that day is only recorded when a subsequent trade takes place. However, this return will be correlated with the previous returns of firms which did trade introducing spurious autocorrelation. He therefore argues that the riskiness of small firms is improperly estimated by beta due autocorrelation in portfolio returns caused by infrequent trading.

Using a Dimson (1979) beta estimator which better estimates risk under conditions of infrequent trading, Roll finds that the equally-weighted index is significantly more risky, justifying its higher return. Roll also argues that this underestimation of risk for infrequently traded securities may also explain some of the anomalies mentioned later in this paper such as the P/E effect and the dividend yield effect.

Stoll and Whaley (1983) approach the small firm effect from a different direction and investigate whether differential transaction costs may help explain the anomaly. Once again they do find that small firms earn higher-risk adjusted returns than large firms in their sample. In fact mean realized returns are inversely related to market size while beta is directly related.

As in the Roll (1981) study, Stoll and Whaley use the Dimson (1979) methodology to estimate betas under conditions of infrequent trading. Contrary to the earlier study they find that infrequency does not explain the difference in returns between small and large firms.

They then take transaction costs in the form of the bid-ask spread and brokers' commissions into account. Bid-ask spreads vary inversely with price per share and frequency of trading and directly with risk. Brokers' commission decreases with price per share and number of round lots traded. Applying this finding, Stoll and Whaley find that the market value effect is actually reversed. They therefore conclude that transaction costs at least partially account for the anomaly.

Similarly, Blume and Stambaugh (1983) find that a bid-ask effect is introduced into data when computed returns are based on closing prices. According to their paper, this bid-ask effect introduces a bias which could explain the existence of the size effect in previous research.

They argue that this effect is likely to arise when a study forms equally-weighted rebalanced portfolios. Instead these biases can be greatly reduced by using the returns implicit in a buy-and-hold strategy. By doing so with their sample, Blume and Stambaugh find that the full-year size effect is half as strong.

Fama and French (1992) conclude that size, along with the book-to-market ratio do in fact have significant explanatory power in explaining the average returns of NASDAQ, AMEX and NYSE shares. They conclude that these two variables "provide a simple and powerful characterization of the cross-section of returns" (Fama and French, 1992:429).

Building on this result, Fama and French (1996) show that all other anomalies identified under the CAPM disappear when size and book-to-market ratio together with excess return over the market are included as factors in a three-factor risk-estimation model.

As mentioned earlier, van Rensburg (2001) investigates sources of style-based risk on the JSE Securities Exchange. Through cluster analysis he finds three important style-based risks. One of these is market capitalization as a proxy for quality.

Van Rensburg and Robertson (2002) investigate the size and P/E anomalies on the JSE Securities Exchange. Even after controlling for infrequent trading and lookahead bias they find that smaller firms earn a premium over larger firms. In addition, the size attribute is significantly positively related to beta. They also find that both the size and P/E effects operate independently on the JSE.

2.4.6 Price-Earnings Ratio

In the literature on identifying extreme performance, only Reinganum (1988) mentions price-earnings (P/E) ratio as a possible signal. After investigation, however, he concludes that this variable is not significant in predicting extreme performance. Despite this, due to the large amount of research on the subject and the particular pertinence in the South African market, this section explores the P/E effect in more detail.

Basu (1977) finds that low P/E portfolios have, on average, higher risk-adjusted returns than high P/E portfolios. After taking transaction and search costs and tax effects into account, he finds that abnormal return is eroded to a large degree. He does conclude, however, that the semi-strong form of the efficient market hypothesis does not apply and there seem to be lags and frictions in the price adjustment process to new information.

Cook and Rozeff (1984) explore whether there are separate size and P/E effects at work on the New York Stock Exchange or whether one subsumes the other. They find

evidence that both effects are at work. They do conclude, however, that P/E ratio and market value may simply measure separate aspects of the same underlying effect.

Banz and Breen (1986) show that the relationship between P/E ratio and market return disappears after controlling for look-ahead and survivorship biases. In response to this, Jaffe, Keim and Westerfield (1989) use a much longer time period and control for survivorship bias. Despite this they still find a significant size and P/E effect, with the P/E effect being the stronger of the two.

Davis (1994) also controls for survivorship bias and look-ahead bias. In addition, the study focuses on stocks in the top half of the size spectrum so that problems with infrequent trading and bid-ask spreads are avoided. He finds that earnings yield together with book-to-market equity and cash flow yield have significant explanatory power with regard to the cross-section of stock returns over the period from June1940 until June 1963.

In a South African study, Page and Palmer (1991) conclude that firms with high E/P ratios have generally performed better than those with smaller E/P ratios. In addition, it seems as if the P/E effect is stronger than the size effect on the JSE Securities Exchange. Similarly, Page (1996) finds that the P/E effect is the stronger of the two on the South African market.

As mentioned earlier, van Rensburg and Robertson (2002) find both a size and a P/E effect on the JSE Securities Exchange. They conclude that the two effects are independent and there are therefore at least two style-based risk factors on the JSE.

2.4.7 Dividend Yield

Although none of the literature above identifies dividends as influential in predicting extreme performance, much other literature including Ou and Penman (1989) have identified some measure of dividends to affect stock returns. Other papers have shown that dividends and dividend policy do not, in fact, influence expected returns.

For example, Black and Scholes (1974) show that it is not possible to demonstrate that the expected returns on high yield common stocks differ from the expected returns on low yield common stocks either before or after taxes.

The Citizens Utility Company has two classes of common stock which are identical in almost every way except dividend payout. Long (1978) investigates this company and finds that cash dividends demand a premium over equal before-tax capital gains. Since there is no reason to believe that investors are not fully aware of the publicly available information on the characteristics of the stocks, Long concludes that there is a significant demand for cash dividends despite a generally lower after-tax return to investors holding claim to these dividends.

Litzenberger and Ramaswany (1979) derive an after-tax version of the CAPM in order to determine whether a clientele effect as proposed by Miller and Modigliani (1961) exists for investors in different tax brackets.

They find that the before-tax expected return on a security is linearly related to both its systematic risk and its dividend yield. In other words, investors require compensation in the form of a higher expected return for investing in a firm which pays out higher dividends. In addition, they do find a clientele effect with stockholders in higher tax brackets choosing stocks with low yields and investors in lower tax brackets choosing securities with high yields.

2.4.8 Working Capital Management

According to Shin and Soenen (1998), the way in which working capital is managed can have a significant impact on both the liquidity and profitability of the company. In addition the papers above by Ou and Penman (1989), Lev and Thiagarajan (1993) and Abarbnell and Bushee (1998) all identify some measure of efficiency of asset management as crucial in determining stock returns.

There are many measures of working capital management. The Cash Conversion Cycle is the sum of inventory and receivables days less payables days. The Weighted

Cash Conversion Cycle (CCC) scales the timing in the previous measure by the amount of funds in each step (Gentry, Vaidyanathan and Lee, 1990). However, due to data availability and conceptual problems, Shin and Soenen (1998) recommend the Net Trade Cycle (NTC), where the components of the CCC are expressed as percentages of "days sales".

Testing this measure, Shin and Soenen find that the NTC is inversely related to firm profitability. In fact, reducing the NTC is one way for the firm to create additional shareholder value.

2.4.9 Capital Structure

Only Ou and Penman (1989) identify capital structure as a significant fundamental variable. Although the literature on extreme performance does not mention the level of debt in a company as an important signal, the organisation of the equity capital is found to be important. For example, O'Neil (2004) states that the number of outstanding shares should be below 25 million, while Reinganum (1988) finds that this should be below 20 million.

A great deal of research deals with the relevance of capital structure to firm value and the cost of capital. According to Miller and Modigliani's (M & M) Proposition I, the average cost of capital to any firm is completely independent of its capital structure (Miller and Modigliani, 1958). However, due to the tax-deductibility of interest payments M & M Proposition II states that the optimal capital structure is composed entirely of debt.

Graham and Harvey (2001) find in their large survey-based study that the tax-advantage of debt and hence a high debt-equity ratio is most important for large, regulated and dividend-paying firms. They also find little evidence to suggest that firms consider personal taxes and hence aim at particular clienteles when designing debt policy.

On the other hand, as the proportion of debt in the capital structure increases, the probability of bankruptcy and hence the expected cost of bankruptcy increases (Baxter,1967). Therefore there is an upper limit on the optimal debt-equity ratio.

Graham and Harvey (2001) find that although the potential costs of distress are not important in decision making for most firms, this is a vital consideration for speculative grade firms. Most firms, however, are more concerned with earnings volatility and their credit ratings when making debt decisions.

Ross (1977) shows that if management compensation packages are designed correctly, rational managers are induced to signal the quality of their firms to the market by altering the amount of debt in the capital structure. However, Graham and Harvey (2001) find that very few firms indicate that debt policy is affected by factors consistent with signaling.

Another signaling model, presented by Myers and Majluf (1984), shows that by issuing equity managers can signal bad news to the market. This leads to the Pecking Order Theory of Capital Structure which implies that firms will first use liquid assets, then issue debt and only as a last alternative use equity to finance projects.

According to Graham and Harvey (2001), although there is evidence of the Pecking Order Theory at work in practice, it is not driven by asymmetric information as suggested by the theory. Instead management's desire for financial flexibility and their reluctance to issue equity if it is undervalued leads to similar results.

According to Jensen and Meckling (1976), increasing the level of debt in the capital structure increases debt servicing requirements and hence makes the firm more probable of bankruptcy. Due to this constraint, managers are more likely to be careful in spending free cash flows to the firm, causing them to act more like owners and thereby decreasing agency costs. This more productive behaviour could enhance the value of the firm. There is little real-world evidence, however, that firms discipline managers by taking on debt (Graham and Harvey, 2001).

Bhandari (1998) finds that expected stock returns are directly related to debt-equity ratios even after controlling for systematic risk, firm size and the January effect. He finds that this result is robust regardless of the estimation techniques or market proxies used.

2.4.10 Macroeconomic and Market Conditions

O'Neil (2004) mentions in his "CAN SLIM" strategy that extreme winners are less likely to come by in a weak market. It is therefore important to consider the market condition as well as other macroeconomic variables when attempting to predict extreme performers.

As touched on earlier, inflationary condition seems to play a role in the predictive power of certain signals. For example, Lev and Thiagarajan (1993) find that the negative message conveyed by receivables increasing relative to sales is only statistically significant in high-inflation years. They also find that economic growth measured by the change in real GNP and business activity measured by the change in Business Inventories have an effect on the fundamental signals.

Abarbnell and Bushee (1997) find similar results with respect to receivables as a signal. In addition, they find that the gross margin is also a more significant signal in high-inflation years when it is more vital that firms are able to maintain their margins in the face of rising input prices. Besides these two conclusions, they find little other evidence that macroeconomic trends affect the informativeness of the fundamental signals for future earnings.

2.5. Summary and Conclusion

This chapter touches on a variety of different topics. Firstly, Section 2.2 provides a theoretical overview of concepts relevant to this research. It highlights the EMH and shows how under the hypothesis of market efficiency prices already reflect all available information, implying the consistent production of abnormal profits to be

impossible. The presence of anomalies is explained as either the result of market efficiencies or of misspecifications in the asset pricing models used to identify these abnormal opportunities.

In order to minimize the problems of model misspecification, a variety of asset pricing models are considered. The section concludes by recommending a two-factor APT model with the Resources and Financial-industrial indexes as the factors be used in a South African context. This model will therefore be applies in Chapter 8 of this thesis.

Furthermore, this thesis aims to identify extreme performers – those securities whose prices have at least doubled or halved. If such a feat is possible, it would be difficult to attribute the exceptional resulting performance solely to risk-measurement errors. This would therefore provide evidence in favour of refuting market efficiency.

Section 2.3 provides a summary of prior research on the identification of extreme performers. In particular, it reviews the work of O'Neil (2004), Reignanum (1988), Glickman et al (2001), Dong et al (2003) and Tunstall et al (2004). This section not only provides an overview of the findings of each of these but also supplies insight into the methodologies used to derive these results.

Although the results of these papers are similar in some respects, they also differ in many ways. This may imply that there are many sub-optimal filters combinations which can be used to identify extreme performers. The variety of solutions may be attributed to the fact that the studies are conducted on different markets, each with their own unique characteristics. This explanation would provide justification for conducting such a study on the JSE Securities Exchange, a market where very little research has been conducted on the topic.

Alternatively, the inconsistency among the results may be due to the differing methodologies used or problems with the data employed. It is therefore important that the techniques employed in this thesis are as robust as possible and the data as free from biases as possible.

Section 2.4 considers a variety of potential signals. It focuses not only on those variables which are found to be important in the extreme performance literature, but also on others found to be important outside this small sphere of research. This section aims to identify and explain as many potential signals as possible in order that the data used in this study is economically justifiable and cannot be refuted on the grounds of data snooping.

In particular, the section begins by considering literature on insider trading. It finds that there is a great deal of disagreement in prior studies regarding the usefulness of insider trading news in predicting returns.

The section moves on to consider an area with a relatively large amount of past attentions: fundamental analysis. The usefulness of this area of research is explicitly considered. Furthermore, the value of numerous fundamental variables relating to inventory, accounts receivable, intangibles, gross margin, selling and administrative expenses, tax rates, order backlogs, labour force and audit qualifications are considered.

The section turns next to a variety of anomalies. It first outlines the debate surrounding market-to-book value. Next, a large portion of the section is devoted to the importance of momentum. The various explanations for this anomaly, including inefficiencies in the market, cross-correlations in returns caused by the presence of infrequent trading, and the irrationality of investors are considered. Furthermore, size and price-earnings ratio anomalies are reviewed and contrasted both in South Africa and internationally.

Three last areas (dividend yields, working capital management and capital structure) are considered. Finally, the dependency of the impact of the various identified signals on market conditions and other macro-economic factors is reviewed.

-3-

Data and Summary of Methodology

3.1 Introduction

This chapter introduces the data that are analysed in Chapters 4 to 8. The data consist of stock returns data and firm-specific attribute data. In addition, the chapter provides a brief outline of the methodology to follow in the remainder of the thesis. The chapter continues as follows:

Section 3.2 provides an overview of the dataset chosen. Section 3.3 continues by explaining how the dataset has been adjusted and controlled for statistical biases. The methodology employed in later chapters begins by identifying extreme performance signals in one subsample of the dataset and then testing the robustness of these results an a second independent subsample. Section 3.4 outlines the procedure used for forming these in- and out-sample groups of shares. In addition, this section defines exactly what qualifies as an extreme performer for the purposes of this study. Using this definition, Section 3.5 describes in detail all extreme winners and losers included in the dataset.

In order to test for signals of extreme performance, this thesis employs a substantial amount of data regarding companies. Section 3.6 derives the potential variables to be used in attempting to predict extreme performance. Section 3.7 considers the number of observations available for each of these variables.

Section 3.8 provides a summary of the methodologies to follow in Chapters 4 to 8. Finally, Section 3.9 summarizes and concludes.

3.2 Choice of dataset

The study is conducted with monthly data over the ten-year period from January 1995 until December 2004 on the JSE Securities Exchange. All ordinary shares on the JSE Securities Exchange with a market capitalization above R100 million as at December 2004 are included. Any remaining securities on the Venture Capital Market (VCM) and the Development Capital Market (DCM) are removed. Ten securities for which no return data is available for the entire sample period are completely ignored (see Appendix A.1.). In addition all Property Loan Stock (PLS) companies are removed (see Appendix A.2.). After these elimination procedures, 213 companies providing 25 560 firm months of data remain in the dataset.

The reason for the exclusion of PLS companies is that they are different from other companies as they do not pay tax at the corporate level. Instead, these companies pay interest which is taxable in the hands of the investors on what is essentially a loan (Still, 2003). This difference in the structure of returns to investors introduces discrepancies between the ratios of these and other companies. In order to avoid this variation in the sample data, PLS companies are ignored.

The timeframe chosen intentionally begins after the entry of South Africa into democracy. This is so that the results obtained are not distorted by economic and political events during the transition period. In addition, the results obtained are more likely to be applicable in the future in the continuing climate of global economic integration.

Monthly data is used in order to avoid the problems of infrequent trading discussed next. In addition, a ten-year period should provide enough observations to derive valid conclusions and is of a comparable length to the other studies of extreme performance reviewed earlier.

3.3 Statistical Biases

Throughout the papers reviewed in the *Literature Review* section, findings have been challenged on the basis of statistical biases. Over time, studies have been undertaken which eliminate these biases to verify the results. It is therefore important that this thesis is designed in such a way as to minimize statistical biases. In so doing, the most robust, statistically-sound results will be obtained. This section continues by explaining how the data employed in this study has been controlled for three particular biases: infrequent trading, survivorship and look-ahead biases.

3.3.1 Infrequent trading

One of the most cited causes of statistical biases in the reviewed work is infrequent trading. According to Dimson (1979) when infrequent trading is present, prices recorded at the end of a time period tend to represent the outcome of a transaction that occurred earlier in or even prior to the time period in question. Fisher (1966) points out that an index constructed from such data is an average of temporally ordered underlying data and hence positive serial correlation will be present.

This positive serial correlation lowers both the estimated variance of returns and the covariance with the market (or the beta). This in turn implies that risk-adjusted returns will seem too high for the understated beta.

Schwartz and Whitcomb (1977) show that as the effect of infrequent trading is reduced by increasing the differencing interval, the explanatory power of regression equations and the mean value of beta tends to rise. This is further evidence that infrequent trading contributes to the underestimation of systematic risk.

Scholes and Williams (1977) find that for securities traded on average either very frequently or very infrequently, ordinary least squares estimators are obtained that are biased upward for alphas and downward for betas. For the remaining securities, alphas and betas are biased in the opposite direction. To solve this problem, they

derive computationally convenient, consistent estimators for coefficients in the market model.

Similarly, Dimson (1979) derives an alternative method for calculating betas when infrequent trading is a problem. This method, the Aggregate Coefficients method, appears to eliminate most of the bias in beta attributable to non-trading.

Since there is a strong positive relationship between market value and trading activity (James and Edmister, 1983) the statistical problems introduced by infrequent trading are most likely to be present in smaller-capitalization securities. Therefore, in order to reduce this effect, Banz (1981) finds that the use of a market value-weighted index is preferable to an equally-weighted index where disproportionate weight is given to smaller securities. Davis (1994) eliminates the problem of infrequent trading by only including stocks in the top half of the size spectrum in his study.

In response to this issue monthly data is used to avoid the acute problems associated with infrequent trading which arise when daily or weekly data is used. In addition, similar to Davis (1994) a size criteria is introduced – the study focuses on stocks with a market capitalization greater than R100 million as at the end of the sample period, December 2004. These two choices should help to reduce the problems of infrequent trading.

3.3.2 Survivorship bias

Survivorship bias occurs when only firms that have survived beyond a certain point are included in the sample as this excludes the weaker, non-surviving firms and could therefore lead to invalid conclusions. Care must be taken to ensure that a database containing observations from delisted or liquidated companies is used such as in Davis (1994). Unfortunately the Datastream database is not controlled for survivorship bias.

According to van Rensburg (2001) the work of Davis (1994) suggests that survivorship bias is unlikely to be a major problem in a study which employs large

non-thinly traded firms in its sample. However, the size minimum in this study of R100 million is a relatively small limit, being only approximately 0.04% of the total market capitalization of the JSE Securities Exchange as at December 2004. In addition, extreme losers are more likely to go bankrupt, implying that survivorship bias could be a particular problem in this paper.

3.3.3 Look-ahead bias

Look-ahead bias occurs when models are built assuming that accounting or other information was publicly available before it actually was. Particular care must be taken when looking at earnings and other accounting figures which are published after firms' financial year ends. In order to avoid this problem, accounting data can be lagged such as in Banz and Breen (1986) and van Rensburg and Robertson (2002). As all information is obtained from the Datastream database and Datastream International only updates information once it is publicly available, the study is free from lookahead bias.

3.4 Subsample Formation and Extreme Performance Requirements

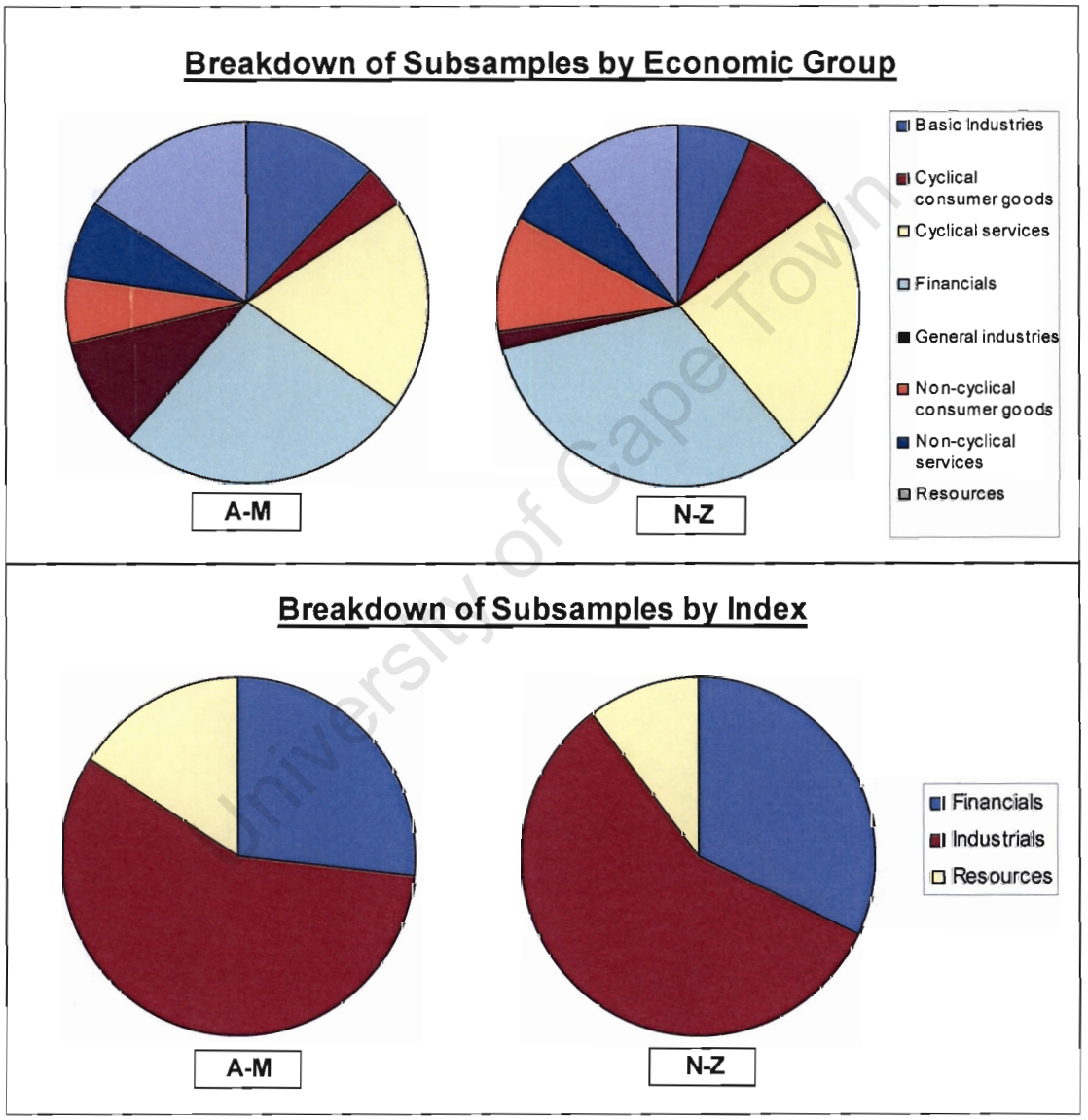
As mentioned in the previous section, only shares with a market capitalization greater than R100 million are included in this study. The purpose of this is to reduce the bias introduced by infrequent trading. The first step is therefore to apply this band to the data and eliminate all securities with market capitalizations below this level as at December 2004 (the end of the sample period).

As in the previous extreme performance studies, it is important to have at least two subsamples – one to identify signals of extreme performance and a second out-of-sample group to test whether these signals hold up in an independent sample. Tunstall, Stein and Carris (2004) form two subsamples by dividing the sample alphabetically: those securities beginning with the letters A to M and those beginning with N to Z. This yields 101 stocks in the first subsample and 59 stocks in the second subsample.

The fact that the two sample sizes are so different is not ideal. In addition, the graph below shows that the two subsamples are not identical in terms of economic group or index composition:

Figure 3.1. Composition of alphabetically defined samples

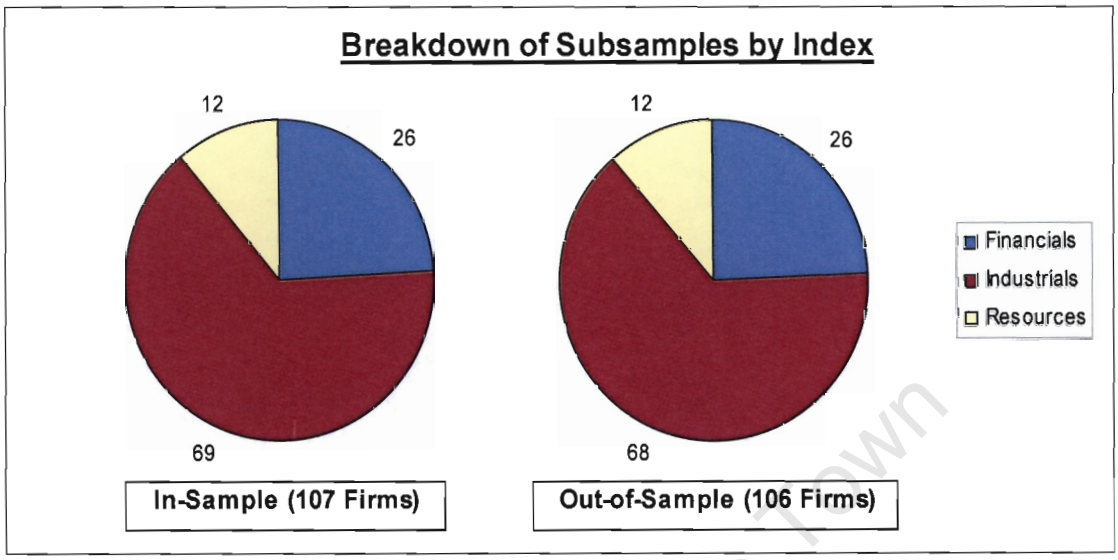
The pie charts below show the composition of two samples in terms of economic group (top panel) and index (bottom panel) if the samples are formed by splitting the dataset alphabetically. The graphs display the vast difference in composition attained by using this method.



In order to solve these two problems, a slightly different method is used in forming the two subsamples. The first subsample includes the first half of each economic group alphabetically while the second subsample includes the second half. This ensures that equal numbers of securities are included in each subsample and that the subsamples are composed of similar proportions of different security types.

Figure 3.2. Composition of newly formed samples

The pie charts below show the composition of two sample in terms of index. The samples are formed by splitting each economic group in half alphabetically in order to ensure a similar composition.



Due to the non-normality of certain financial ratios' distributions, it is necessary to reduce the impact of outliers. Foster (1978) provides a number of methods for dealing with outliers. These include dropping outliers, transforming the data to approximate normality or winzorising the data. In this thesis, all outliers further than five standard deviations from the median of each variable are dropped. The mean and standard deviation are then recalculated and all remaining outliers further than three standard deviations from the mean are winsorised to this outer boundary.

After this procedure has taken place, variables which are still significantly positively skewed undergo a natural logarithmic transformation as suggested by Foster (1978) of the form:

$$Z_i = \log(X_i)$$

A list of variables which are subjected to this transformation are included in Appendix A.3.

The first stage of tests are conducted on the first subsample (the "in-sample"). Firstly, it is necessary to identify which shares in the group are in fact extreme performers. An extreme winner is defined as a share which at least doubles (100 percent return) in a

twelve month period while an extreme loser is a security which at least halves (a negative 50 percent return) in a similar length period. Secondly, once these extreme performers have been identified the subsample is broken down into a further three groups: extreme winners, extreme losers and a control group consisting of all other securities.

Unlike Tunstall et al (2004), multiple instances of extreme performance in the same security in the same twelve month period are not ignored. Instead these observations are included in the dataset for two reasons. Firstly, a security which displays extreme performance for a number of periods deserves to have its characteristics weighted more heavily than securities with only single-period extreme performance. Secondly, by allowing multiple instances of extreme performance, a sell signal is implicitly being created – the security should be disposed of twelve months after the extreme performance signals are no longer significant. If multiple instances of extreme performance were not allowed the derivation of separate sell signals would be required.

Extreme performance is ignored if the starting price is below 10 cents. This rule is included to limit the biases associated with penny stocks.

3.5 Actual Extreme Performers

Since this thesis examines extreme performers on the JSE Securities Exchange over the ten year period starting at the beginning of 1995, it is pertinent to know the sample of extreme winners and losers that are used to perform the study. Lists of extreme winners and losers, their extreme performance dates, their total performance over these periods as well as annualized returns[2] for these periods are included in Tables 3.1. and 3.2. below respectively. As mentioned earlier, extreme performers are only included when their price exceeds 10 cents.

[2] Annualized Return = $\left(1 + \text{Total Return}\right)^{12 / \text{Period Length}} - 1$

Table 3.1. Sample Extreme Winners

The table lists all extreme winners on the JSE Securities Exchange from January 1995 until December 2004 included in this study sorted by company. An extreme winner is defined as a stock which at least doubles in a 12 month period. In addition to the names of all extreme performers, the table lists the share codes for each, their dates of extreme performance, the length of each of these periods as well as the total and annualized returns earned in each period.

Share Code	Company Name	Start Date	End Date	Length (Months)	Total Return	Annualized Return	Share Code	Company Name	Start Date	End Date	Length (Months)	Total Return	Annualized Return
ADR	ADCORP	1995/01/31	1997/11/30	34	1302.0%	153.9%	COM	COMAIR	1998/11/30	2000/02/29	15	172.9%	123.7%
ADR	ADCORP	1997/02/28	1998/02/28	12	107.4%	107.4%	CMH	COMBINED MOTOR	1995/01/31	1996/04/30	15	601.2%	375.0%
ADR	ADCORP	1997/04/30	1998/05/31	13	144.7%	128.4%	CMH	COMBINED MOTOR	1998/12/31	1999/12/31	12	113.4%	113.4%
ADR	ADCORP	2003/02/28	2004/04/30	14	111.1%	89.7%	CMH	COMBINED MOTOR	2003/11/30	2004/12/31	13	135.8%	120.7%
ADH	ADVTECH	2002/12/31	2004/04/30	16	114.8%	77.4%	CNC	CONCOR	1995/01/31	1996/03/31	14	121.2%	97.5%
AFE	AECI	1998/09/30	1999/09/30	12	100.1%	100.1%	CNC	CONCOR	2001/03/31	2002/05/31	14	194.1%	152.1%
AFE	AECI	1998/12/31	2000/03/31	15	122.2%	89.4%	CNC	CONCOR	2001/08/30	2002/09/30	12	117.9%	117.9%
AFR	AFGRI	2000/04/30	2002/03/31	23	362.8%	127.4%	CCT	CONNECTION GP.	1998/10/31	2000/10/31	12	101.1%	101.1%
AFL	AFLEASE GD.& UR.RES.	1995/07/31	1996/09/30	14	163.9%	129.7%	CCT	CONNECTION GP.	2001/10/31	2002/10/31	12	106.8%	106.8%
AFL	AFLEASE GD.& UR.RES.	1995/11/30	1997/02/28	15	100.0%	74.5%	CCT	CONNECTION GP.	2002/11/30	2004/07/31	20	246.5%	110.8%
AFL	AFLEASE GD.& UR.RES.	1996/06/30	1997/06/30	12	102.7%	102.7%	CCT	CONNECTION GP.	2003/09/30	2004/10/31	13	148.3%	131.5%
AFL	AFLEASE GD.& UR.RES.	1997/12/31	1998/12/31	12	115.4%	115.4%	CCT	CONNECTION GP.	2003/12/31	2004/12/31	12	101.3%	101.3%
AFL	AFLEASE GD.& UR.RES.	1998/02/28	2000/02/29	12	130.0%	130.0%	CNL	CONTROL INSTRUMENTS GP.	1995/02/28	1996/03/31	13	102.9%	91.8%
AFL	AFLEASE GD.& UR.RES.	2001/01/31	2003/01/31	24	396.4%	122.8%	CNL	CONTROL INSTRUMENTS GP.	1995/06/30	1996/06/31	14	91.2%	74.3%
ARI	AFN RAINBOW MRLS.	1998/08/31	1999/08/31	12	115.1%	115.1%	CNL	CONTROL INSTRUMENTS GP.	2002/02/28	2003/02/28	12	123.7%	123.7%
ARI	AFN RAINBOW MRLS.	1998/10/31	2000/02/29	16	108.2%	73.5%	CNL	CONTROL INSTRUMENTS GP.	2003/06/30	2004/07/31	13	142.4%	128.4%
ABL	AFRICAN BANK INVS.	1995/02/28	1998/12/31	46	14046.9%	283.6%	CPA	CORPCAPITAL	1995/07/31	1996/10/31	15	74.2%	55.9%
ABL	AFRICAN BANK INVS.	2002/12/31	2003/12/31	12	100.4%	100.4%	CPA	CORPCAPITAL	1996/03/31	1997/04/30	13	417.7%	356.2%
ABL	AFRICAN BANK INVS.	2003/02/28	2004/06/30	16	127.2%	85.0%	CPA	CORPCAPITAL	1997/05/31	1998/07/31	14	195.1%	152.9%
ABL	AFRICAN BANK INVS.	2003/09/30	2004/12/31	15	219.4%	153.2%	CPA	CORPCAPITAL	2002/07/31	2003/09/30	14	112.1%	90.5%
AFI	AFRICAN LIFE ASR	1995/03/31	1996/04/30	13	119.9%	107.0%	CPA	CORPCAPITAL	2003/01/31	2004/01/31	12	110.4%	110.4%
AFI	AFRICAN LIFE ASR	1995/07/31	1996/11/30	16	153.3%	100.8%	CUL	CULLINAN	2001/03/31	2003/03/31	24	425.4%	129.2%
AFI	AFRICAN LIFE ASR	1996/05/31	1998/07/31	26	518.8%	131.9%	CUL	CULLINAN	2002/05/31	2003/07/31	14	156.6%	123.5%
AFB	ALEXANDER FORBES	1998/12/31	1999/12/31	12	100.1%	100.1%	CUL	CULLINAN	2002/12/31	2003/12/31	12	118.9%	118.9%
ALT	ALLIED TECHNOLOGIES	1996/07/31	1997/07/31	12	101.7%	101.7%	CUL	CULLINAN	2003/04/30	2004/04/30	12	108.3%	108.3%
ALT	ALLIED TECHNOLOGIES	1996/09/30	1998/04/30	19	211.4%	104.9%	DCT	DATACENTRIX	1998/10/31	1999/12/31	14	306.8%	232.9%
ALT	ALLIED TECHNOLOGIES	1999/10/31	2000/10/31	12	105.9%	105.9%	DTC	DATATEC	1995/01/31	1996/12/31	23	755.8%	208.5%
AMA	AMAL APPC.	1997/05/31	1998/05/31	12	113.8%	113.8%	DTC	DATATEC	1996/02/29	1998/06/31	30	770.4%	137.4%
AMA	AMAL APPC.	2001/09/30	2002/09/30	12	103.8%	103.8%	DTC	DATATEC	1997/10/31	1998/10/31	12	157.3%	157.3%
AMA	AMAL APPC.	2001/12/31	2003/01/31	13	110.1%	98.4%	DTC	DATATEC	2002/12/31	2004/04/30	16	88.2%	80.6%
AMA	AMAL APPC.	2002/09/30	2004/12/31	27	640.3%	143.5%	DGC	DIGICORE	2002/10/31	2003/10/31	12	108.3%	108.3%
AGL	ANGLO AMERICAN (JSE)	1998/08/31	1999/09/30	13	116.0%	103.6%	DGC	DIGICORE	2002/12/31	2004/12/31	24	777.7%	196.3%
AGL	ANGLO AMERICAN (JSE)	1998/11/30	2000/01/31	14	102.9%	83.4%	DDT	DIMENSION DATA HDG (JSE)	1995/01/31	1997/09/30	32	988.4%	143.1%
AMS	ANGLO AMERICAN PLAT.	1998/08/30	1999/06/30	12	127.8%	127.8%	DDT	DIMENSION DATA HDG (JSE)	1997/02/28	1998/05/31	15	167.0%	119.0%
AMS	ANGLO AMERICAN PLAT.	1998/10/31	2000/01/31	15	132.7%	96.5%	DDT	DIMENSION DATA HDG (JSE)	1997/07/31	1998/07/31	12	105.9%	105.9%
AMS	ANGLO AMERICAN PLAT.	1999/08/31	2000/08/31	12	106.8%	106.8%	DDT	DIMENSION DATA HDG (JSE)	1999/02/28	2000/03/31	13	133.9%	118.6%
AMS	ANGLO AMERICAN PLAT.	2000/01/31	2001/02/28	13	105.9%	95.4%	DDT	DIMENSION DATA HDG (JSE)	1999/06/30	2000/10/31	16	146.5%	96.7%
AMS	ANGLO AMERICAN PLAT.	2000/04/30	2001/05/31	13	178.1%	155.4%	DDT	DIMENSION DATA HDG (JSE)	2003/03/31	2004/04/30	13	141.2%	125.4%
ANG	ANGLOGOLD ASHANTI	1995/05/31	1996/05/31	12	100.7%	100.7%	DSY	DISCOVERY	2003/03/31	2004/04/30	13	135.6%	120.6%
ANG	ANGLOGOLD ASHANTI	2000/12/31	2002/05/31	17	204.9%	119.7%	DST	DISTELL GROUP	1998/12/31	2000/02/29	14	122.8%	89.0%
ANG	ANGLOGOLD ASHANTI	2001/09/30	2002/09/30	12	104.7%	104.7%	DLV	DORBYL	1995/01/31	1996/02/29	13	107.5%	86.5%
ART	ARGENT INDUSTRIAL	1998/09/30	1999/09/30	12	114.7%	114.7%	DLV	DORBYL	1998/08/31	1999/08/31	12	114.8%	114.8%
ART	ARGENT INDUSTRIAL	1998/12/31	2000/03/31	15	96.9%	72.0%	DLV	DORBYL	1998/12/31	2000/02/29	14	182.9%	129.4%
ART	ARGENT INDUSTRIAL	1999/05/31	2000/05/31	12	114.9%	114.9%	DRD	DRD GOLD	1997/11/30	1998/12/31	13	116.7%	104.2%
ART	ARGENT INDUSTRIAL	2000/08/31	2001/08/31	12	102.6%	102.6%	DRD	DRD GOLD	2000/11/30	2002/11/30	24	535.5%	152.1%
ART	ARGENT INDUSTRIAL	2001/12/31	2003/02/28	14	116.5%	94.5%	DAW	DS & WHSG NETWORK	1995/01/31	1996/05/31	16	103.9%	70.6%
ART	ARGENT INDUSTRIAL	2003/10/31	2004/12/31	14	223.5%	173.5%	DAW	DS & WHSG NETWORK	1997/07/31	1998/07/31	12	129.9%	129.9%
APN	ASPEN PHMCR.	1997/06/30	1999/06/30	24	940.8%	222.6%	DAW	DS.& WHSG.NETWORK	1997/11/30	1999/02/28	15	211.8%	149.4%
APN	ASPEN PHMCR.	1998/08/31	1999/09/30	13	78.7%	70.9%	DAW	DS & WHSG NETWORK	2002/02/28	2003/03/31	13	117.7%	104.7%
ARL	ASTRAL FOODS	2002/10/31	2003/10/31	12	108.9%	108.9%	DAW	DS & WHSG NETWORK	2002/05/31	2004/12/31	31	1426.4%	187.2%
ARL	ASTRAL FOODS	2003/03/31	2004/04/30	13	143.5%	127.3%	ECO	EDGARS CONS.STORES	1998/06/31	2000/04/30	20	204.9%	95.2%
ARL	ASTRAL FOODS	2003/06/30	2004/06/30	12	108.0%	108.0%	ECO	EDGARS CONS.STORES	2001/12/31	2003/04/30	16	110.2%	74.6%
ARL	ASTRAL FOODS	2003/11/30	2004/12/31	13	139.0%	123.5%	ECO	EDGARS CONS.STORES	2002/06/30	2004/06/30	24	363.6%	115.3%
APK	ASTRAPAK	2000/08/31	2001/12/31	16	128.8%	86.0%	ECO	EDGARS CONS.STORES	2003/09/30	2004/12/31	15	254.8%	175.4%
APK	ASTRAPAK	2002/10/31	2003/10/31	12	109.6%	109.6%	ELR	ELB GROUP	1999/02/28	2000/02/29	12	103.7%	103.7%
APK	ASTRAPAK	2003/01/31	2004/01/31	12	108.6%	108.6%	ELH	ELLERINE	1998/11/30	2000/01/31	14	154.5%	122.7%
APK	ASTRAPAK	2003/03/31	2004/04/30	13	111.8%	99.9%	EOH	ENTER OUTSC	2002/09/30	2003/09/30	12	111.5%	111.5%
AVI	AVI	1998/09/30	2000/06/30	21	250.0%	104.8%	EOH	ENTER OUTSC	2003/04/30	2004/08/30	14	123.3%	99.1%
BAW	BARLOWORLD	1998/12/31	1999/12/31	12	104.3%	104.3%	EOH	ENTER OUTSC	2003/11/30	2004/12/31	13	133.1%	118.4%
BJM	BARNARD JAC MELLET	1998/06/30	1998/09/30	15	56.3%	43.0%	ENV	ENVIROSERV	1998/05/31	1997/05/31	12	111.1%	111.1%
BPL	BARPLATS INVS.	1997/09/30	1998/09/30	12	147.6%	147.6%	ENV	ENVIROSERV	2000/02/29	2001/02/28	12	115.4%	115.4%
BPL	BARPLATS INVS.	1997/12/31	2000/04/30	28	905.6%	168.9%	ERP	ERP COM	2001/03/31	2002/03/31	12	200.0%	200.0%
BPL	BARPLATS INVS.	1999/10/31	2000/11/30	13	218.2%	189.4%	ERP	ERP COM	2001/05/31	2002/07/31	14	122.2%	98.3%
BPL	BARPLATS INVS.	2000/05/31	2001/06/30	13	106.2%	95.0%	ERP	ERP COM	2001/09/30	2002/09/30	12	145.0%	145.0%
BPL	BARPLATS INVS.	2003/08/31	2004/12/31	16	202.7%	129.5%	ERP	ERP COM	2002/07/31	2003/08/31	13	132.8%	118.1%
BRM	BEARING MAN	1995/03/31	1997/02/28	23	219.3%	83.6%	ERP	ERP COM	2002/10/31	2004/04/30	18	231.1%	122.1%
BRM	BEARING MAN	1998/12/31	2000/01/31	13	148.6%	130.1%	EXL	EXCELLERATE HDG.	1999/02/28	2000/02/29	12	136.6%	136.6%
BRM	BEARING MAN	1999/03/31	2000/03/31	12	107.4%	107.4%	EXL	EXCELLERATE HDG	1999/06/30	2000/12/31	18	106.2%	82.0%
BRM	BEARING MAN	2000/05/31	2001/05/31	12	128.9%	128.9%	EXL	EXCELLERATE HDG	2003/10/31	2004/12/31	14	168.7%	133.3%
BRM	BEARING MAN	2001/09/30	2002/10/31	13	132.2%	117.7%	FBR	FAMOUS BRANDS	1998/12/31	2000/02/29	14	88.1%	56.3%
BRM	BEARING MAN	2001/12/31	2002/12/31	12	115.8%	115.8%	FBR	FAMOUS BRANDS	2003/03/31	2004/12/31	21	451.1%	165.2%
BEL	BELL EQUIPMENT	1998/07/31	1999/11/30	16	257.8%	160.2%	FSR	FIRSTRAND	1995/09/30	1996/10/31	13	141.5%	125.6%
BEL	BELL EQUIPMENT	1999/02/28	2000/11/30	21	209.7%	90.8%	FSR	FIRSTRAND	1996/03/31	1997/06/31	17	171.9%	102.6%
BIL	BHP BILLITON (JSE)	1998/08/31	1999/08/31	12	147.5%	147.5%	FSR	FIRSTRAND	1998/12/31	1998/02/28	14	221.1%	173.1%
BIL	BHP BILLITON (JSE)	1998/10/31	2000/03/31	17	134.2%	82.3%	FOS	FOSCHINI	1998/08/31	1999/08/31	12	113.8%	113.8%
BIL	BHP BILLITON (JSE)	2000/12/31	2001/12/31	12	120.8%	120.8%	FOS	FOSCHINI	1998/12/31	1999/12/31	12	138.5%	138.5%
BVT	BIDVEST GROUP	1997/03/31	1998/03/31	12	103.8%	103.8%	FOS	FOSCHINI	2003/11/30	2004/12/31	13	125.8%	112.1%
BAT	BRAIT SA. (JSE)	1997/05/31	1998/07/31	14	141.7%	113.0%	FRO	FRONTRANGE SLTN.	1997/09/30	1999/03/31	18	1262.3%	470.4%
BRC	BRANDCORP	1995/03/31	1998/03/31	12	101.2%	101.2%	FRO	FRONTRANGE SLTN.	1998/12/31	1999/12/31	12	106.8%	106.8%
BRC	BRANDCORP	1997/04/30	1998/04/30	12	154.5%	154.5%	FRO	FRONTRANGE SLTN.	2001/09/30	2002/10/31	13	179.9%	158.6%
BRC	BRANDCORP	2001/09/30	2003/04/30	19	162.7%	84.0%	FRO	FRONTRANGE SLTN.	2002/02/28	2003/02/28	12	325.8%	325.8%
BRC	BRANDCORP	2002/07/31	2003/07/31	12	112.4%	112.4%	FRO	FRONTRANGE SLTN.	2003/01/31	2004/01/31	12	102.4%	102.4%
BRC	BRANDCORP	2002/12/31	2004/09/30	21	238.9%	100.9%	FRO	FRONTRANGE SLTN.	2003/04/30	2004/11/30	19	255.6%	122.8%
BRC	BRANDCORP	2003/11/30	2004/11/30	12	106.0%	106.0%	GIJ	GIJIMA AST GROUP	1998/08/30	1999/08/30	12	105.5%	105.5%
BRN	BRIMSTONE INV 'N'	2001/10/31	2002/10/31	12	103.6%	103.6%	GMB	GLENRAND M I B	2003/05/31	2004/05/31	12	106.7%	106.7%
BRN	BRIMSTONE INV 'N'	2002/02/28	2003/04/30	14	132.8%	106.4%	GFI	GOLD FIELDS	2000/11/30	2002/12/31	25	492.5%	134.9%
BRN	BRIMSTONE INV 'N'	2002/08/30	2003/06/30	12	113.1%	113.1%	GDF	GOLD REEF CNO RSTS	1998/03/31	1999/05/31	14	105.7%	85.6%
BRN	BRIMSTONE INV 'N'	2002/11/30	2003/12/31	13	131.0%	116.6%	GDF	GOLD REEF CNO RSTS.	1998/08/31	1999/10/31	14	106.2%	87.5%
BRN	BRIMSTONE INV 'N'	2003/02/28	2004/02/29	12	111.7%	111.7%	GDF	GOLD REEF CNO RSTS.	2002/11/30	2004/06/30	19	246.3%	119.1%
BCX	BUSINESS CONNEXION GROUP	1995/03/31	1997/03/31	24	489.9%	142.9%	GDF	GOLD REEF CNO RSTS	2003/08/31	2004/12/31	16	191.9%	123.3%
BCX	BUSINESS CONNEXION GROUP	1997/05/31	1998/05/31	12	117.6%	117.6%	GDH	GOOD HOPE DIAMONDS	1995/07/31	1997/07/31	12	100.0%	100.0%
BCX	BUSINESS CONNEXION GROUP	1997/11/30	1998/11/30	12	106.3%	106.3%	GDH	GOOD HOPE DIAMONDS	2000/04/30	2001/04/30	12	200.0%	200.0%
BTG	BYTES TECH.GP.	1995/08/31	1998/07/31	23	820.3%	218.4%	GDH	GOOD HOPE DIAMONDS	2000/06/30	2001/06/30	12	101.6%	101.6%
BTG	BYTES TECH.GP.	1997/10/31	1998/10/31	12	197.3%	197.3%	GDH	GOOD HOPE DIAMONDS	2000/09/30	2002/03/31	18	298.8%	151.5%
BTG	BYTES TECH.GP.	1997/12/31	1998/12/31	12	100.2%	100.2%	GDH	GOOD HOPE DIAMONDS	2001/05/31	2002/08/31	15	232.5%	161.5%
CPL	CAPITAL PROPERTY FD.	1998/08/31	1999/12/31	16	117.5%	79.1%	GDH	GOOD HOPE DIAMONDS	2001/10/31	2003/01/31	15	100.5%	74.5%
CPI	CAPITEC BANK	2002/02/28	2003/03/31	13	135.5%	120.1%	GDH	GOOD HOPE DIAMONDS	2002/04/30	2003/04/30	12	398.8%	398.8%
CPI	CAPITEC BANK	2002/05/31	2003/10/31	17	207.7%	121.1%	GDH	GOOD HOPE DIAMONDS	2002/12/31	2004/02/29	14	199.8%	156.8%
CPI	CAPITEC BANK	2002/12/31	2004/03/31	15	138.2%	100.3%	GDH	GOOD HOPE DIAMONDS	2003/04/30	2004/09/30	17	149.8%	90.7%
CPI	CAPITEC BANK	2003/09/30	2004/12/31	15	233.7%	162.2%	GND	GRINDROD	1999/09/30	2000/09/30	12	112.9%	112.9%
CRG	CARGO CARRIERS	2001/05/31	2003/04/30	23	300.6%	106.3%	GND	GRINDROD	1999/12/31	2000/12/31	12	101.2%	101.2%
CRG	CARGO CARRIERS	2003/09/30	2004/09/30	12	110.8%	110.8%	GND	GRINDROD	2000/02/29	2001/05/31	15	149.5%	107.5%
CSB	CASHBUILD	1999/02/28	2000/04/30	14	112.3%	90.6%	GND	GRINDROD	2000/10/31	2001/10/31	12	100.7%	100.7%
CSB	CASHBUILD	2000/09/30	2003/12/31	39	1535.6%	136.3%	GND	GRINDROD	2001/02/28	2002/02/28	12	125.3%	125.3%
CAT	CAXTON CTP PUBLISH PRINT	1995/01/31	1996/04/30	15	130.6%	95.1%	GND	GRINDROD	2003/01/31	2004/12/31	23	596.4%	175.3%
CRM	CERAMIC INDUSTRIES	1996/07/31	1998/06/30	23	270.0%	97.9%	GNK	GRINTEK	1995/01/31	1996/01/31	12	104.0%	104.0%
CLH	CITY LODGE HOTELS	1998/09/30	1999/09/30	12	120.2%	120.2%	GNK	GRINTEK	1997/04/30	1998/04/30	12	115.6%	115.6%
CLH	CITY LODGE HOTELS	2001/12/31	2002/12/31	12	105.1%	105.1%	GNK	GRINTEK	1997/06/30	1998/07/31	13	122.3%	109.1%
CLE	CLIENTELE LF.ASR	1997/09/30	1998/09/30	12	117.3%	117.3%	GNK	GRINTEK	1997/12/31	1999/01/31	13	191.9%	166.8%
CLE	CLIENTELE LF.ASR	2003/11/30	2004/12/31	13	128.6%	114.6%	GNK	GRINTEK	1998/03/31	1999/04/30	13	140.3%	124.6%

Table 3.1. Sample Extreme Winners

Continued.

Share Code	Company Name	Start Date	End Date	Length (Months)	Total Return	Annualized Return	Share Code	Company Name	Start Date	End Date	Length (Months)	Total Return	Annualized Return
GRF	GROUP FIVE	1996/11/30	2000/03/31	16	80.9%	56.0%	MET	METROPOLITAN HDG	1997/02/28	1998/05/31	15	100.1%	74.0%
GRF	GROUP FIVE	2000/10/31	2001/12/31	14	173.6%	137.0%	MMG	MICROMEGA HDG.	1998/12/31	2000/07/31	19	145.8%	76.5%
GRF	GROUP FIVE	2002/01/31	2003/01/31	12	103.4%	103.4%	MMG	MICROMEGA HDG	2003/04/30	2004/04/30	12	111.8%	111.8%
GRF	GROUP FIVE	2003/04/30	2004/04/30	12	111.5%	111.5%	MMG	MICROMEGA HDG	2003/06/30	2004/12/31	18	283.5%	136.4%
GRF	GROUP FIVE	2003/06/30	2004/06/30	12	121.2%	121.2%	MLA	MITTAL STEEL SA.	1998/09/30	1999/10/31	13	119.5%	106.6%
HAR	HARMONY GOLD MNG.	1997/11/30	1998/12/31	13	128.5%	114.4%	MLA	MITTAL STEEL SA	1998/12/31	2000/02/29	14	103.7%	84.3%
HAR	HARMONY GOLD MNG	2000/11/30	2002/11/30	24	340.5%	109.9%	MLA	MITTAL STEEL SA.	2000/06/30	2001/06/30	12	150.9%	150.9%
HVL	HIGHVELD STL & VNM	2003/08/31	2004/12/31	16	261.2%	162.0%	MLA	MITTAL STEEL SA	2000/10/31	2003/01/31	27	2046.4%	290.7%
HCI	HOSKEN CONS INV.	1995/01/31	1997/05/31	28	721.0%	146.5%	MLA	MITTAL STEEL SA.	2003/02/28	2004/12/31	22	294.5%	111.2%
HCI	HOSKEN CONS INV	1996/07/31	1997/07/31	12	111.7%	111.7%	MOB	MOBILE INDUSTRIES	2000/07/31	2001/07/31	12	140.0%	140.0%
HCI	HOSKEN CONS INV.	1998/12/31	2000/03/31	15	203.8%	143.2%	MOB	MOBILE INDUSTRIES	2000/11/30	2002/01/31	14	142.5%	113.6%
HCI	HOSKEN CONS INV.	1999/05/31	2000/10/31	17	83.9%	53.7%	MOB	MOBILE INDUSTRIES	2001/03/31	2002/04/30	13	149.9%	132.9%
HCI	HOSKEN CONS.INV.	2003/09/30	2004/12/31	15	561.9%	353.5%	MBN	MOBILE INDUSTRIES 'N'	2000/07/31	2001/07/31	12	140.7%	140.7%
HWN	HOWDEN AFRICA	2002/07/31	2003/07/31	12	105.5%	105.5%	MBN	MOBILE INDUSTRIES 'N'	2000/11/30	2002/05/31	18	142.9%	80.7%
HWN	HOWDEN AFRICA	2003/01/31	2004/02/29	13	166.8%	147.8%	MPC	MR PRICE GROUP	1998/09/30	1999/09/30	12	102.2%	102.2%
HWN	HOWDEN AFRICA	2003/05/31	2004/06/30	13	112.0%	100.1%	MPC	MR PRICE GROUP	1998/12/31	2000/01/31	13	192.2%	169.0%
HWN	HOWDEN AFRICA	2003/08/31	2004/11/30	15	196.3%	136.4%	MTN	MTN GROUP	1997/04/30	1998/04/30	12	114.0%	114.0%
HDC	HUDACO	1999/01/31	2000/03/31	14	124.8%	100.3%	MTN	MTN GROUP	1998/08/31	1999/08/31	12	100.8%	100.8%
IDI	IDION TECH.	1998/08/31	2000/03/31	19	585.9%	237.4%	MTN	MTN GROUP	1998/11/30	2000/10/31	23	287.2%	102.6%
IDI	IDION TECH.	2001/09/30	2002/11/30	14	158.8%	125.8%	MTN	MTN GROUP	2002/09/30	2003/10/31	13	197.6%	173.7%
IDI	IDION TECH	2002/01/31	2003/03/31	14	424.4%	313.9%	MTN	MTN GROUP	2002/12/31	2004/05/31	17	149.0%	90.4%
IDI	IDION TECH	2002/07/31	2003/07/31	12	111.8%	111.8%	MUR	MURRAY & ROBERTS	1998/01/31	2000/02/29	13	67.3%	61.0%
ILA	ILIAD AFRICA	2000/10/31	2001/11/30	13	129.6%	115.4%	MUR	MURRAY & ROBERTS	2000/05/31	2001/05/31	12	100.0%	100.0%
ILA	ILIAD AFRICA	2001/01/31	2002/01/31	12	110.8%	110.8%	MUR	MURRAY & ROBERTS	2000/07/31	2001/08/31	13	158.6%	140.4%
ILA	ILIAD AFRICA	2001/08/30	2003/08/31	23	410.0%	134.0%	MUR	MURRAY & ROBERTS	2000/10/31	2001/12/31	14	135.5%	108.4%
ILA	ILIAD AFRICA	2002/10/31	2003/10/31	12	114.4%	114.4%	MST	MUSTEK	2000/10/31	2001/12/31	14	109.8%	88.6%
ILA	ILIAD AFRICA	2002/12/31	2003/12/31	12	129.7%	129.7%	MST	MUSTEK	2001/02/28	2002/02/28	12	123.5%	123.5%
ILA	ILIAD AFRICA	2003/03/31	2004/04/30	13	124.2%	110.7%	MST	MUSTEK	2001/05/31	2002/05/31	12	112.4%	112.4%
ILA	ILIAD AFRICA	2003/06/30	2004/07/31	13	124.3%	110.8%	MST	MUSTEK	2002/02/28	2003/02/28	12	114.2%	114.2%
ILA	ILIAD AFRICA	2003/09/30	2004/11/30	14	159.5%	126.5%	MST	MUSTEK	2003/04/30	2004/04/30	12	111.7%	111.7%
IMP	IMPALA PLATINUM	1998/01/31	1999/02/28	13	145.8%	130.4%	MAF	MUTUAL & FEDERAL IN.	1995/02/28	1996/04/30	14	110.0%	86.9%
IMP	IMPALA PLATINUM	1998/04/30	2000/03/31	23	271.4%	98.3%	MVG	MVELAPHANDA GROUP	1997/04/30	1998/07/31	15	214.3%	150.0%
IMP	IMPALA PLATINUM	2000/05/31	2001/05/31	12	109.6%	109.6%	MVL	MVELAPHANDA RES.	1998/02/28	2001/07/31	41	5596.4%	226.1%
IMP	IMPALA PLATINUM	2001/03/31	2002/03/31	12	125.2%	125.2%	MVL	MVELAPHANDA RES	2001/09/30	2002/10/31	13	119.7%	106.8%
IPL	IMPERIAL	1995/01/31	1996/01/31	12	102.9%	102.9%	NPK	NAMPAK	1998/11/30	1999/12/31	13	142.4%	126.4%
INM	INMINS	1995/07/31	1998/08/31	13	134.9%	120.0%	NPN	NASPERS	1998/11/30	2000/05/31	18	191.0%	103.8%
INM	INMINS	1996/02/29	1998/01/31	23	319.8%	111.1%	NPN	NASPERS	1999/08/31	2000/09/30	13	99.0%	86.7%
INM	INMINS	1999/02/28	2000/02/29	12	164.6%	164.6%	NPN	NASPERS	2003/03/31	2004/04/30	13	145.5%	129.1%
INM	INMINS	2000/12/31	2001/12/31	12	102.8%	102.8%	NTC	NETWORK HLTHCR	2000/06/30	2002/02/28	20	238.0%	108.2%
INM	INMINS	2001/07/31	2002/08/31	13	95.1%	85.4%	NTC	NETWORK HLTHCR.	2001/04/30	2002/05/31	13	116.2%	103.6%
INM	INMINS	2002/06/30	2003/06/30	12	109.8%	109.8%	NCL	NEW CLICKS HDG	1997/03/31	1998/03/31	12	118.0%	118.0%
INM	INMINS	2002/10/31	2004/09/30	23	316.2%	110.4%	NCL	NEW CLICKS HDG.	1998/08/31	1999/08/31	12	101.5%	101.5%
INM	INMINS	2003/12/31	2004/12/31	12	100.4%	100.4%	NCL	NEW CLICKS HDG	1998/12/31	1999/12/31	12	126.8%	126.8%
INL	INVESTEC	1996/07/31	1997/07/31	12	104.2%	104.2%	NHM	NORTHAM PLATINUM	1998/02/28	1998/04/30	14	329.7%	248.9%
IVT	INVICTA	1995/01/31	1996/01/31	12	105.4%	105.4%	NHM	NORTHAM PLATINUM	1998/09/30	2000/01/31	16	243.4%	152.3%
IVT	INVICTA	1995/10/31	1996/11/30	13	88.8%	79.8%	NHM	NORTHAM PLATINUM	1999/08/31	2000/08/31	12	132.4%	132.4%
IVT	INVICTA	1996/07/31	1997/08/31	13	167.6%	148.1%	NHM	NORTHAM PLATINUM	1999/10/31	2000/12/31	14	152.7%	121.3%
IVT	INVICTA	1999/02/28	2000/02/29	12	104.7%	104.7%	NHM	NORTHAM PLATINUM	2000/02/29	2001/02/28	12	125.8%	125.8%
IVT	INVICTA	2001/11/30	2002/11/30	12	111.5%	111.5%	NHM	NORTHAM PLATINUM	2000/04/30	2001/06/30	14	182.5%	143.5%
IVT	INVICTA	2002/02/28	2003/02/28	12	106.0%	106.0%	NHM	NORTHAM PLATINUM	2001/10/31	2002/10/31	12	113.8%	113.8%
IVT	INVICTA	2003/11/30	2004/12/31	13	99.5%	89.2%	NWL	NU WORLD	1995/01/31	1996/04/30	15	181.6%	129.0%
ITE	ITALTILE	1995/01/31	1996/04/30	15	172.5%	123.0%	NWL	NU WORLD	1997/05/31	1998/06/30	13	98.5%	86.3%
ITE	ITALTILE	1998/08/31	1998/02/28	18	197.4%	107.3%	NWL	NU WORLD	2003/03/31	2004/05/31	14	150.0%	119.3%
ITE	ITALTILE	1997/04/30	1998/04/30	12	101.0%	101.0%	NWL	NU WORLD	2003/07/31	2004/07/31	12	104.7%	104.7%
ITE	ITALTILE	1999/01/31	2000/02/29	13	119.0%	106.6%	OMN	OMNIA	2001/02/28	2002/05/31	15	120.0%	87.6%
JSC	JASCO ELTN.	1997/03/31	1998/07/31	16	426.4%	247.5%	OMN	OMNIA	2001/07/31	2003/06/30	23	330.6%	114.2%
JSC	JASCO ELTN	1997/10/31	1999/02/28	16	146.8%	97.5%	OMN	OMNIA	2003/11/30	2004/12/31	13	131.4%	117.0%
JSC	JASCO ELTN	2001/02/28	2002/05/31	15	265.4%	181.4%	PAM	PALABORA MINING	1998/07/31	1999/08/30	14	94.9%	77.2%
JSC	JASCO ELTN	2001/07/31	2003/03/31	20	365.7%	151.7%	PHM	PHUMELELA GMG & LEIS	2002/06/30	2003/10/31	16	484.8%	276.0%
JCD	JCI	2002/08/31	2003/08/31	12	108.2%	108.2%	PHM	PHUMELELA GMG & LEIS.	2003/01/31	2004/06/30	17	108.8%	68.0%
JCD	JCI	2002/10/31	2003/10/31	12	103.1%	103.1%	PHM	PHUMELELA GMG & LEIS.	2003/11/30	2004/12/31	13	139.4%	123.9%
JDG	JD GROUP	1998/12/31	1999/12/31	12	107.4%	107.4%	PIK	PICK N PAY STORES	1998/09/30	1999/09/30	12	107.4%	107.4%
JDG	JD GROUP	2002/12/31	2003/12/31	12	112.4%	112.4%	PWK	PIK N PAY	1998/12/31	1999/12/31	12	104.8%	104.8%
JDG	JD GROUP	2003/02/28	2004/03/31	13	113.5%	101.1%	PPC	PRETORIA POR CMT.	2003/12/31	2004/12/31	12	119.6%	119.6%
JNC	JOHNNIC	1998/12/31	2000/10/31	22	220.9%	88.9%	PMA	PRIMEDIA	1996/03/31	1997/06/30	15	134.5%	97.7%
JNC	JOHNNIC	2002/09/30	2003/09/30	12	127.3%	127.3%	PMA	PRIMEDIA	2003/04/30	2004/09/30	17	150.5%	91.2%
JNC	JOHNNIC	2003/03/31	2004/03/31	12	111.3%	111.3%	PMN	PRIMEDIA 'N'	2003/02/28	2004/09/30	19	180.1%	91.6%
JCM	JOHNNIC COMMS.	1995/02/28	1996/06/31	18	140.2%	79.2%	PIM	PRISM	2002/09/30	2004/04/30	19	156.7%	81.4%
JCM	JOHNNIC COMMS.	1998/12/31	2000/06/30	18	261.5%	135.5%	PSG	PSG GROUP	1995/01/31	1996/12/31	23	350.3%	119.3%
JCM	JOHNNIC COMMS.	1999/06/31	2000/09/30	13	118.6%	105.8%	PSG	PSG GROUP	1996/02/29	1997/02/28	12	140.6%	140.6%
KGM	KAGISO MEDIA	1995/01/31	1996/04/30	15	257.5%	177.1%	PSG	PSG GROUP	1996/05/31	1998/05/31	24	329.0%	107.1%
KGM	KAGISO MEDIA	1997/02/28	1998/05/31	15	258.1%	176.8%	PSG	PSG GROUP	2003/03/31	2004/03/31	12	108.1%	108.1%
KGM	KAGISO MEDIA	2000/10/31	2002/01/31	15	171.3%	122.2%	PSG	PSG GROUP	2003/11/30	2004/12/31	13	176.3%	157.2%
KGM	KAGISO MEDIA	2001/04/30	2002/04/30	12	127.0%	127.0%	PPR	PUTCO PROPERTIES	1998/12/31	2000/02/29	14	112.9%	91.4%
KGM	KAGISO MEDIA	2001/07/31	2002/08/30	14	122.1%	98.2%	RBW	RAINBOW CHICKEN	1998/02/28	1999/02/28	12	101.4%	101.4%
KGM	KAGISO MEDIA	2002/10/31	2003/10/31	12	104.3%	104.3%	RBW	RAINBOW CHICKEN	1998/11/30	2000/11/30	12	103.3%	103.3%
KGM	KAGISO MEDIA	2002/12/31	2004/04/30	16	217.5%	137.8%	RBW	RAINBOW CHICKEN	2000/02/29	2001/02/28	12	131.8%	131.8%
KGM	KAGISO MEDIA	2003/07/31	2004/08/30	14	161.8%	128.0%	RBW	RAINBOW CHICKEN	2000/04/30	2001/06/30	14	169.6%	134.0%
KGM	KAGISO MEDIA	2003/11/30	2004/12/31	13	148.2%	131.5%	RBW	RAINBOW CHICKEN	2000/11/30	2001/11/30	12	113.7%	113.7%
KAP	KAP INTL	2002/07/31	2003/07/31	12	115.4%	115.4%	RBW	RAINBOW CHICKEN	2002/10/31	2003/10/31	12	106.5%	106.5%
KAP	KAP INTL	2002/10/31	2003/10/31	12	106.3%	106.3%	RNG	RANDGOLD & EXP	1995/04/30	1997/03/31	23	225.2%	85.0%
KAP	KAP INTL	2003/12/31	2004/12/31	12	212.5%	212.5%	RNG	RANDGOLD & EXP	1998/08/31	1999/09/30	13	128.6%	114.5%
KWV	KWV BELEGGINGS BPK.	1999/02/28	2000/02/29	12	117.6%	117.6%	RNG	RANDGOLD & EXP	1998/12/31	1999/12/31	12	193.1%	193.1%
LAR	LA GROUP	1995/02/28	1996/02/29	12	118.7%	118.7%	RNG	RANDGOLD & EXP.	2000/12/31	2002/07/31	19	201.0%	100.5%
LAR	LA GROUP	1995/04/30	1997/10/31	30	1899.1%	231.4%	RNG	RANDGOLD & EXP	2001/09/30	2002/09/30	12	105.3%	105.3%
LAR	LA GROUP	1997/02/28	1998/07/31	17	196.1%	114.8%	RNG	RANDGOLD & EXP.	2001/11/30	2003/03/31	16	263.7%	163.4%
LAR	LA GROUP	2003/08/30	2004/10/31	16	214.9%	136.4%	RNG	RANDGOLD & EXP	2002/08/31	2003/08/31	12	100.8%	100.6%
LAR	LA GROUP	2003/12/31	2004/12/31	12	169.5%	169.5%	RAH	REAL AFRICA	1995/07/31	1996/11/30	16	207.7%	132.3%
LAN	LA GROUP 'N'	1997/08/30	1998/08/30	12	118.7%	118.7%	RAH	REAL AFRICA	1996/01/31	1997/10/31	21	330.1%	130.2%
LAN	LA GROUP 'N'	2003/04/30	2004/12/31	20	759.9%	263.8%	RAH	REAL AFRICA	1996/12/31	1998/07/31	19	508.4%	212.8%
LBH	LIBERTY	1998/12/31	2000/01/31	13	102.2%	91.5%	RAH	REAL AFRICA	1997/09/30	1998/09/30	12	103.6%	103.6%
LON	LONMIN (JSE)	1998/05/31	1999/10/31	17	183.6%	98.2%	RLO	REUNERT	1999/01/31	2000/01/31	12	101.6%	101.6%
LON	LONMIN (JSE)	1998/12/31	2000/01/31	13	125.8%	112.1%	RLO	REUNERT	1999/07/31	2000/09/30	14	116.7%	94.0%
LON	LONMIN (JSE)	2001/03/31	2002/03/31	12	125.6%	125.6%	RLO	REUNERT	2000/05/31	2001/05/31	12	101.6%	101.6%
MCU	M CUBED HOLDINGS	2003/02/28	2004/02/29	12	109.5%	109.5%	RMH	RMB	1995/09/30	1996/10/31	13	112.6%	100.7%
MDC	MEDI CLINIC	1995/01/31	1996/04/30	15	180.0%	127.9%	RMH	RMB	1996/04/30	1997/08/31	16	158.5%	103.9%
MDC	MEDI CLINIC	1995/06/30	1996/10/31	16	190.2%	122.3%	RMH	RMB	1997/01/31	1998/02/28	13	226.2%	199.5%
MDC	MEDI CLINIC	2000/04/30	2001/04/30	12	105.4%	105.4%	SBL	SABLE	1998/12/31	1999/12/31	12	160.3%	160.3%
MRF	MERAFE RESOURCES	1997/02/28	1998/07/31	17	165.9%	99.2%	SBL	SABLE	1999/03/31	2000/03/31	12	122.3%	122.3%
MRF	MERAFE RESOURCES	1997/12/31	1998/12/31	12	118.3%	118.3%	SBL	SABLE	1999/05/31	2000/08/31	15	149.8%	108.0%
MRF	MERAFE RESOURCES	2001/05/31	2002/10/31	17	132.7%	81.5%	SBL	SABLE	2003/10/31	2004/10/31	12	100.1%	100.1%
MTL	MERCANTILE BANK	2003/01/31	2004/01/31	12	141.4%	141.4%	SBL	SABLE	2003/12/31	2004/12/31	12	129.5%	129.5%
MTL	MERCANTILE BANK	2003/03/31	2004/03/31	12	106.9%	106.9%	SNT	SANTAM	1995/01/31	1996/04/30	15	119.5%	87.5%
MES	MESSINA	1998/02/28	2000/01/31	23	320.2%	111.2%	SAP	SAPPI	1996/06/30	1999/09/30	15	174.2%	124.1%
MES	MESSINA	1999/03/31	2000/03/31	12	120.0%	120.0%	SAP	SAPPI	1996/11/30	2000/02/29	15	113.3%	83.6%
MES	MESSINA	2000/04/30	2002/03/31	23	373.7%	125.1%	SAP	SAPPI	2000/11/30	2002/03/31	16	218.3%	138.3%
MES	MESSINA	2001/08/31	2003/01/31	17	96.4%	61.1%	SAP	SAPPI	2001/06/30	2002/06/30	12	109.4%	109.4%
MTA	METAIR INVESTMENTS	1995/01/31	1996/02/29	13	131.5%	117.5%	SFN	SASFIN	1995/01/31	1996/05/31	16	268.1%	165.8%
MTA	METAIR INVESTMENTS	2000/01/31	2001/11/30	22	178.3%	74.8%	SFN	SASFIN	1995/09/30	1996/09/30	12	144.9%	144.9%
MTA	METAIR INVESTMENTS	2001/09/30	2002/09/30	12	100.7%	100.7%	SFN	SASFIN	1996/05/31	1998/05/31	24	478.6%	140.5%
MTA	METAIR INVESTMENTS	2001/11/30	2002/12/31	13	122.1%	108.9%	SFN	SASFIN	2003/02/28	2004/12/31	22	450.6%	153.2%
MET	METROPOLITAN HDG.	1995/01/31	1996/01/31	12	104.5%	104.5%	SOL	SASOL	1995/11/30	1996/11/30	12	112.9%	112.9%
MET	METROPOLITAN HDG	1995/09/30	1996/09/30	12	108.7%	108.7%	SOL	SASOL	1998/11/30	2000/01/31	14	134.2%	107.4%
MET	METROPOLITAN HDG	1996/12/31	1997/12/31	12	108.4%	108.4%	SOL	SASOL	2000/12/31	2001/12/31	12	125.4%	125.4%

Table 3.1. Sample Extreme Winners

Continued.

Share Code	Company Name	Start Date	End Date	Length (Months)	Total Return	Annualized Return	Share Code	Company Name	Start Date	End Date	Length (Months)	Total Return	Annualized Return
SCN	SCHARRIG MINING	2000/03/31	2001/04/30	13	118.4%	105.6%	TSX	TRANS HEX GROUP	1998/12/31	1999/12/31	12	137.0%	137.0%
SCN	SCHARRIG MINING	2000/10/31	2001/10/31	12	132.0%	132.0%	TSX	TRANS HEX GROUP	2000/05/31	2001/05/31	12	163.5%	163.5%
SCN	SCHARRIG MINING	2002/06/31	2003/09/30	13	110.6%	98.9%	TSX	TRANS HEX GROUP	2001/09/30	2002/11/30	14	110.9%	89.6%
SCN	SCHARRIG MINING	2003/02/28	2004/06/31	18	225.5%	119.3%	TPC	TRANSPACO	1995/01/31	1996/11/30	22	449.9%	153.4%
SCN	SCHARRIG MINING	2003/10/31	2004/12/31	14	156.3%	124.1%	TPC	TRANSPACO	1995/09/30	1998/06/31	23	264.6%	96.4%
SRN	SEARDEL INV	1999/12/31	2000/12/31	12	100.7%	100.7%	TPC	TRANSPACO	2001/08/31	2003/09/30	25	350.0%	105.9%
SKJ	SEKUNJALO INVS	2002/01/31	2003/02/28	13	95.0%	85.9%	TPC	TRANSPACO	2002/11/30	2003/12/31	13	125.8%	112.1%
SKJ	SEKUNJALO INVS.	2002/07/31	2003/10/31	15	175.2%	125.4%	TPC	TRANSPACO	2003/02/28	2004/02/29	12	109.0%	109.0%
SKJ	SEKUNJALO INVS	2002/12/31	2003/12/31	12	109.6%	109.6%	TRE	TRENCOR	2000/04/30	2001/05/31	13	95.7%	85.9%
SKJ	SEKUNJALO INVS	2003/03/31	2004/04/30	13	125.5%	111.8%	TRE	TRENCOR	2000/07/31	2001/07/31	12	140.0%	140.0%
STO	SETPOINT TECH	1997/11/30	1999/01/31	14	288.7%	218.8%	TRE	TRENCOR	2000/09/30	2001/09/30	12	104.1%	104.1%
STO	SETPOINT TECH	2001/05/31	2002/06/30	13	129.7%	115.4%	TRE	TRENCOR	2000/11/30	2002/03/31	16	118.0%	79.4%
SHP	SHOPRITE	1996/10/31	1997/10/31	12	109.2%	109.2%	TRE	TRENCOR	2001/05/31	2002/05/31	12	101.1%	101.1%
SHP	SHOPRITE	1997/02/28	1998/04/30	14	146.3%	116.5%	TRU	TRUWORTHS INTL	1998/08/31	1999/09/30	13	95.5%	85.7%
SOV	SOVEREIGN FOOD INVS	2000/02/29	2001/12/31	22	251.4%	98.3%	TRU	TRUWORTHS INTL	1998/12/31	1999/12/31	12	112.0%	112.0%
SOV	SOVEREIGN FOOD INVS	2003/08/31	2004/12/31	16	359.0%	213.6%	UCS	UCS GROUP	1998/10/31	1999/10/31	12	150.1%	150.1%
SPS	SPESCOM	1996/05/31	1997/06/31	15	152.8%	109.9%	UCS	UCS GROUP	1998/12/31	1999/12/31	12	103.2%	103.2%
SPS	SPESCOM	1997/07/31	1998/07/31	12	130.0%	130.0%	UCS	UCS GROUP	2002/12/31	2003/12/31	12	132.6%	132.6%
SPS	SPESCOM	2002/08/30	2003/08/30	12	149.0%	149.0%	UCS	UCS GROUP	2003/04/30	2004/06/30	14	117.5%	94.6%
SPS	SPESCOM	2002/11/30	2004/06/30	19	110.8%	80.2%	UTR	UNITRANS	1999/01/31	2000/02/29	13	112.0%	100.4%
SUR	SPUR	2000/04/30	2001/09/30	17	143.2%	87.3%	VLE	VALUE GROUP	2001/09/30	2002/09/30	12	100.0%	100.0%
SHF	STEINHOFF INTL	1999/02/28	2000/02/29	12	105.2%	105.2%	VLE	VALUE GROUP	2002/02/28	2003/03/31	13	99.7%	89.0%
SPG	SUPER GROUP	1995/01/31	1996/12/31	23	403.6%	132.4%	VLE	VALUE GROUP	2002/07/31	2004/06/30	23	387.4%	128.5%
SPG	SUPER GROUP	1996/02/29	1997/08/31	18	259.2%	134.2%	WES	WESCO INVESTMENTS	1998/10/31	1999/12/31	14	116.6%	94.0%
SPG	SUPER GROUP	1997/04/30	1998/05/31	13	155.8%	136.0%	WES	WESCO INVESTMENTS	2000/04/30	2001/12/31	20	208.3%	98.5%
SPG	SUPER GROUP	2003/04/30	2004/04/30	12	112.7%	112.7%	WBO	WILSON BAY HLM OVC	1995/01/31	1996/04/30	15	130.2%	94.8%
SYC	SYCOM PROPERTY FUND	1998/08/31	1999/10/31	14	125.7%	100.9%	WBO	WILSON BAY HLM OVC	1996/07/31	1997/08/31	13	112.8%	100.8%
TKG	TELKOM	2003/03/31	2004/06/30	15	180.6%	128.3%	WBO	WILSON BAY HLM OVC	1996/10/31	1997/12/31	14	108.1%	87.4%
TKG	TELKOM	2003/06/31	2004/06/31	12	102.2%	102.2%	WBO	WILSON BAY HLM OVC	1996/11/30	2000/02/29	15	187.8%	133.4%
BSB	THE HOUSE OF BUSBY	2003/10/31	2004/12/31	14	149.1%	118.6%	WBO	WILSON BAY HLM OVC	2000/04/30	2002/03/31	23	209.4%	80.3%
TIW	TIGER WHEELS	1995/01/31	1996/01/31	12	103.9%	103.9%	WNH	WINHOLD	1995/09/30	1996/09/30	12	100.0%	100.0%
TIW	TIGER WHEELS	1995/04/30	1996/10/31	18	158.3%	88.3%	WNH	WINHOLD	1996/01/31	1997/11/30	22	267.9%	103.5%
TIW	TIGER WHEELS	1995/12/31	1996/12/31	12	106.0%	106.0%	WNH	WINHOLD	2000/07/31	2001/07/31	12	103.5%	103.5%
TIW	TIGER WHEELS	2003/04/30	2004/04/30	12	111.3%	111.3%	WNH	WINHOLD	2001/08/31	2003/01/31	17	141.6%	86.4%
TRT	TOURISM INV	2000/06/30	2001/06/30	12	127.1%	127.1%	WNH	WINHOLD	2002/03/31	2003/03/31	12	106.6%	106.6%
TRT	TOURISM INV	2000/10/31	2001/11/30	13	124.6%	111.1%	WNH	WINHOLD	2002/10/31	2003/12/31	14	137.3%	109.8%
TRT	TOURISM INV	2001/09/30	2003/02/28	17	139.7%	85.8%	WNH	WINHOLD	2003/02/28	2004/02/29	12	129.1%	129.1%
TSX	TRANS HEX GROUP	1995/10/31	1997/05/31	19	255.9%	123.0%	WNH	WINHOLD	2003/04/30	2004/10/31	18	317.4%	159.3%
TSX	TRANS HEX GROUP	1998/08/31	1999/08/31	12	123.1%	123.1%	WNH	WINHOLD	2003/12/31	2004/12/31	12	120.3%	120.3%

Table 3.2. Sample Extreme Losers

The table lists all extreme losers on the JSE Securities Exchange from January 1995 until December 2004 included in this study sorted by company. An extreme loser is defined as a stock which at least halves in value in a 12 month period. In addition to the names of all extreme performers, the table lists the share codes for each, their dates of extreme performance, the length of each of these periods as well as the total and annualized returns earned in each period.

Share Code	Company Name	Start Date	End Date	Length (Months)	Total Return	Annualized Return
ADR	ADCORP	1999/11/30	2000/11/30	12	-53.0%	-53.0%
ADR	ADCORP	2000/03/31	2001/03/31	12	-51.8%	-51.8%
ADR	ADCORP	2001/06/31	2002/09/30	13	-57.1%	-54.2%
ADH	ADVTECH	1998/03/31	1999/07/31	16	-75.0%	-64.7%
ADH	ADVTECH	1998/10/31	2000/12/31	26	-92.9%	-70.5%
AFE	AECI	1997/09/30	1998/09/30	12	-55.8%	-55.8%
AFE	AECI	1997/11/30	1998/11/30	12	-52.1%	-52.1%
AFE	AECI	1998/05/31	1999/05/31	12	-51.4%	-51.4%
AFL	AFLEASE GD & UR RES	1995/01/31	1996/01/31	12	-50.0%	-50.0%
AFL	AFLEASE GD & UR RES	1997/06/30	1998/06/30	12	-80.0%	-80.0%
AFL	AFLEASE GD & UR RES	1999/10/31	2000/11/30	13	-48.9%	-46.2%
AFL	AFLEASE GD & UR RES.	2003/01/31	2004/01/31	12	-58.3%	-58.3%
AFL	AFLEASE GD & UR RES	2003/03/31	2004/03/31	12	-50.6%	-50.6%
AFL	AFLEASE GD & UR RES	2003/06/30	2004/11/30	17	-64.4%	-51.7%
ARI	AFN.RAINBOW MRLS	1995/11/30	1996/03/31	16	-67.2%	-56.6%
ARI	AFN.RAINBOW MRLS	1997/05/31	1999/01/31	20	-80.4%	-62.3%
ABL	AFRICAN BANK INVS	1998/10/31	1999/10/31	12	-53.9%	-53.9%
ABL	AFRICAN BANK INVS.	1999/06/30	2000/07/31	13	-62.5%	-59.6%
ABL	AFRICAN BANK INVS	1999/11/30	2001/01/31	14	-42.0%	-37.3%
AFI	AFRICAN LIFE ASR	1999/06/30	2000/06/31	14	-65.6%	-59.9%
AFI	AFRICAN LIFE ASR.	1999/10/31	2001/05/31	19	-61.0%	-44.9%
AFX	AFRICAN OXYGEN	1997/08/31	1998/08/31	12	-58.8%	-58.8%
ATN	ALLIED ELECTRONICS	1996/01/31	1997/01/31	12	-51.7%	-51.7%
ALT	ALLIED TECHNOLOGIES	1995/12/31	1997/01/31	13	-47.6%	-45.0%
AMA	AMALAPPC	1997/09/30	1998/09/30	12	-50.8%	-50.8%
AMA	AMALAPPC	1997/11/30	1998/11/30	12	-57.1%	-57.1%
AMA	AMALAPPC	1998/01/31	1999/07/31	18	-67.1%	-52.3%
AMA	AMALAPPC	1999/12/31	2000/12/31	12	-53.3%	-53.3%
AMS	ANGLO AMERICAN PLAT	2002/03/31	2003/04/30	13	-56.6%	-53.7%
ART	ARGENT INDUSTRIAL	1995/05/31	1996/05/31	12	-54.3%	-54.3%
ART	ARGENT INDUSTRIAL	1995/08/31	1996/08/31	12	-51.6%	-51.6%
ART	ARGENT INDUSTRIAL	1995/11/30	1996/12/31	13	-56.1%	-55.2%
ART	ARGENT INDUSTRIAL	1997/01/31	1998/03/31	14	-54.5%	-49.1%
ART	ARGENT INDUSTRIAL	1997/05/31	1998/10/31	17	-70.2%	-57.5%
ART	ARGENT INDUSTRIAL	1997/12/31	1998/12/31	12	-50.0%	-50.0%
ART	ARGENT INDUSTRIAL	1998/04/30	1999/04/30	12	-55.2%	-55.2%
APN	ASPEN PHMCR	1995/12/31	1996/12/31	12	-53.0%	-53.0%
APN	ASPEN PHMCR.	1996/03/31	1997/03/31	12	-69.1%	-69.1%
APN	ASPEN PHMCR	1996/05/31	1997/10/31	17	-68.3%	-55.5%
APN	ASPEN PHMCR	1997/01/31	1998/01/31	12	-51.5%	-51.5%
APK	ASTRAPAK	1998/01/31	1999/02/28	13	-48.0%	-45.5%
AVI	AVI	1996/11/30	1998/01/31	14	-61.7%	-56.1%
AVI	AVI	1997/03/31	1998/03/31	12	-54.6%	-54.6%
AVI	AVI	1997/06/30	1998/10/31	16	-68.1%	-57.5%
BAW	BARLOWORLD	1997/08/31	1998/09/30	13	-58.8%	-56.9%
BJM	BARNARD JAC MELLET	1999/06/30	2001/05/31	23	-73.3%	-49.8%
BPL	BARPLATS INVS	1996/01/31	1997/01/31	12	-51.9%	-51.9%
BPL	BARPLATS INVS	1997/02/28	1998/02/28	12	-52.9%	-52.9%
BPL	BARPLATS INVS.	2002/05/31	2003/08/31	15	-63.4%	-55.2%
BPL	BARPLATS INVS	2002/10/31	2004/01/31	15	-75.7%	-67.7%
BRM	BEARING MAN	1997/04/30	1998/08/30	14	-67.6%	-61.9%
BRM	BEARING MAN	1997/08/31	1998/08/31	12	-64.1%	-64.1%
BRM	BEARING MAN	1997/11/30	1999/01/31	14	-60.9%	-55.3%
BRM	BEARING MAN	1998/03/31	1999/03/31	12	-56.1%	-56.1%
BEL	BELL EQUIPMENT	1997/01/31	1998/11/30	22	-78.4%	-56.7%
BCF	BOWLER METCALF	1998/07/31	1999/07/31	12	-52.5%	-52.5%
BCF	BOWLER METCALF	1998/09/30	1999/09/30	12	-54.3%	-54.3%
BRC	BRANDCORP	1997/09/30	1998/09/30	12	-56.5%	-56.5%
BRC	BRANDCORP	1998/02/28	1999/08/31	18	-73.1%	-58.2%
BRC	BRANDCORP	1998/10/31	1999/11/30	13	-57.0%	-54.2%
BRN	BRIMSTONE INV.'N'	1998/07/31	2000/04/30	21	-86.1%	-67.6%
BRN	BRIMSTONE INV.'N'	2000/07/31	2001/07/31	12	-62.6%	-62.6%
BRN	BRIMSTONE INV.'N'	2000/09/30	2001/10/31	13	-62.1%	-59.1%
BCX	BUSINESS CONNEXION GROUP	2001/09/30	2002/10/31	13	-52.4%	-49.6%
BCX	BUSINESS CONNEXION GROUP	2001/12/31	2002/12/31	12	-54.3%	-54.3%
BTG	BYTES TECH GP.	1998/04/30	2001/04/30	36	-96.3%	-74.2%
CDZ	CADIZ	1999/04/30	2000/06/30	14	-59.7%	-54.1%
CDZ	CADIZ	1999/09/30	2001/04/30	19	-55.2%	-39.8%
CDZ	CADIZ	2002/12/31	2004/11/30	23	-89.8%	-69.6%
CRG	CARGO CARRIERS	1998/07/31	1999/07/31	12	-54.5%	-54.5%
CSB	CASHBUILD	1995/01/31	1996/01/31	12	-80.4%	-80.4%
CSB	CASHBUILD	1995/05/31	1996/07/31	14	-69.1%	-63.4%
CSB	CASHBUILD	1998/02/28	1999/03/31	13	-53.7%	-50.8%
CSB	CASHBUILD	1999/11/30	2001/04/30	17	-28.8%	-21.3%
CLH	CITY LODGE HOTELS	1997/02/28	1998/02/28	12	-51.4%	-51.4%
CLH	CITY LODGE HOTELS	1997/09/30	1998/10/31	13	-50.5%	-47.8%
CLH	CITY LODGE HOTELS	1998/01/31	1999/01/31	12	-60.1%	-60.1%
COM	COMAIR	2001/03/31	2002/03/31	12	-51.4%	-51.4%
COM	COMAIR	2001/06/30	2002/07/31	13	-51.1%	-48.4%
CMH	COMBINED MOTOR	1995/12/31	1997/03/31	15	-53.1%	-45.4%
CNC	CONCOR	1997/07/31	1998/09/30	14	-52.6%	-47.3%
CNC	CONCOR	1997/11/30	1999/03/31	16	-81.9%	-51.5%
CNC	CONCOR	1999/05/31	2000/08/31	15	-85.7%	-57.5%
CNC	CONCOR	1999/10/31	2001/04/30	18	-56.2%	-42.3%
CCT	CONNECTION GP.	1998/02/28	2000/03/31	25	-88.3%	-64.2%
CNL	CONTROL INSTRUMENTS GP.	1996/05/31	1998/02/28	21	-81.4%	-61.9%
CNL	CONTROL INSTRUMENTS GP.	1998/07/31	1999/07/31	12	-53.8%	-53.8%
CNL	CONTROL INSTRUMENTS GP.	2000/03/31	2001/03/31	12	-50.3%	-50.3%
CNL	CONTROL INSTRUMENTS GP.	2000/09/30	2001/09/30	12	-50.0%	-50.0%
CNL	CONTROL INSTRUMENTS GP.	2000/12/31	2001/12/31	12	-50.9%	-50.9%
CPA	CORPCAPITAL	1995/03/31	1996/03/31	12	-76.6%	-76.6%
CPA	CORPCAPITAL	1996/09/30	1997/09/30	12	-61.5%	-61.5%
CPA	CORPCAPITAL	1999/07/31	2000/08/31	13	-57.8%	-54.9%
CKS	CROOKES BROTHERS	1997/09/30	1998/11/30	14	-53.7%	-48.3%
CUL	CULLINAN	1995/10/31	1998/02/28	28	-92.0%	-66.2%
CUL	CULLINAN	1997/04/30	1998/04/30	12	-58.5%	-58.5%
CUL	CULLINAN	1997/08/31	1998/08/31	12	-55.3%	-55.3%
CUL	CULLINAN	1998/05/31	2000/07/31	26	-91.3%	-67.7%
DCT	DATACENTRIX	1999/04/30	2000/06/30	14	-65.5%	-59.9%
DCT	DATACENTRIX	1999/09/30	2001/03/31	18	-55.8%	-41.8%
DTC	DATATEC	1999/04/30	2000/04/30	12	-50.0%	-50.0%
DTC	DATATEC	1999/11/30	2001/11/30	24	-82.4%	-58.0%
DTC	DATATEC	2001/01/31	2002/01/31	12	-55.4%	-55.4%
DTC	DATATEC	2001/08/31	2002/08/31	12	-53.3%	-53.3%
DTC	DATATEC	2001/12/31	2003/06/30	18	-66.5%	-51.8%
DGC	DIGICORE	1999/01/31	2000/08/31	19	-76.3%	-59.7%
DGC	DIGICORE	1999/12/31	2000/12/31	12	-59.9%	-59.9%
DGC	DIGICORE	2001/08/31	2002/08/31	12	-52.3%	-52.3%
DOT	DIMENSION DATA HDG.(JSE)	2000/07/31	2003/06/30	35	-95.5%	-65.5%
DST	DISTELL GROUP	1997/06/30	1999/02/28	20	-68.3%	-49.9%
DLV	DORBYL	1997/01/31	1998/01/31	12	-53.6%	-53.6%
DLV	DORBYL	1997/07/31	1998/12/31	17	-70.8%	-58.0%
DRD	DRD GOLD	1998/05/31	1998/03/31	22	-76.2%	-54.3%
DRD	DRD GOLD	1999/11/30	2000/11/30	12	-59.8%	-59.8%
DRD	DRD GOLD	2002/04/30	2003/06/30	14	-56.7%	-51.2%
DRD	DRD GOLD	2002/08/31	2003/09/30	13	-47.0%	-44.4%
DRD	DRD GOLD	2003/12/31	2004/12/31	12	-60.2%	-60.2%
DAW	DS & WHSG.NETWORK	1995/11/30	1998/02/28	27	-93.4%	-70.1%
ECO	EDGARS CONS STORES	1997/06/30	1999/04/30	22	-72.8%	-50.9%
ECO	EDGARS CONS STORES	1999/10/31	2001/06/30	20	-49.5%	-33.6%
ELH	ELLERINE	1997/08/31	1999/02/28	18	-49.0%	-36.2%
ELH	ELLERINE	1998/04/30	1999/04/30	12	-52.2%	-52.2%
EOH	ENTER OUTSC	1999/06/30	2000/06/30	12	-51.5%	-51.5%
EOH	ENTER OUTSC	2000/01/31	2001/02/28	13	-52.8%	-50.2%
EOH	ENTER.OUTSC.	2000/08/31	2001/09/30	13	-66.9%	-63.9%
ENV	ENVIROSERV	1997/01/31	1999/01/31	24	-85.2%	-61.6%
ERP	ERP.COM	1999/09/30	2001/06/30	21	-82.0%	-62.5%
ERP	ERP.COM	2000/10/31	2001/10/31	12	-50.0%	-50.0%
EXL	EXCELLERATE HDG	1998/05/31	1999/08/31	15	-80.8%	-73.3%
EXL	EXCELLERATE HDG.	2002/01/31	2003/01/31	12	-60.1%	-60.1%
EXL	EXCELLERATE HDG	2002/04/30	2003/10/31	18	-56.6%	-42.7%
FBR	FAMOUS BRANDS	1997/08/31	1998/08/31	12	-60.3%	-60.3%
FOS	FOSCHINI	1996/01/31	1997/01/31	12	-50.3%	-50.3%
FOS	FOSCHINI	1997/08/31	1998/09/30	13	-55.2%	-52.3%
FOS	FOSCHINI	1997/12/31	1998/12/31	12	-51.9%	-51.9%
FOS	FOSCHINI	1999/11/30	2001/04/30	17	-63.1%	-50.5%
FRO	FRONTRANGE SLTN	1999/10/31	2002/03/31	29	-95.9%	-73.2%
GIJ	GIJIMA AST GROUP	2001/02/28	2003/09/30	31	-94.7%	-67.8%
GIJ	GIJIMA AST GROUP	2002/11/30	2003/11/30	12	-50.2%	-50.2%
GIJ	GIJIMA AST GROUP	2003/10/31	2004/10/31	12	-51.0%	-51.0%
GDF	GOLD REEF CNO.RSTS	1999/03/31	2000/03/31	12	-53.6%	-53.6%
GDH	GOOD HOPE DIAMONDS	1995/01/31	1996/02/29	13	-78.3%	-75.7%
GDH	GOOD HOPE DIAMONDS	1995/05/31	1996/09/30	16	-70.0%	-59.5%
GDH	GOOD HOPE DIAMONDS	1998/03/31	1999/03/31	12	-55.5%	-55.5%
GDH	GOOD HOPE DIAMONDS	1998/05/31	2000/08/31	27	-93.4%	-70.0%
GDH	GOOD HOPE DIAMONDS	1999/10/31	2001/01/31	15	-66.8%	-58.7%
GND	GRINDROD	1996/04/30	1997/06/30	14	-66.0%	-60.3%
GND	GRINDROD	1998/11/30	1998/03/31	16	-59.4%	-49.1%
GRF	GROUP FIVE	1997/02/28	1998/04/30	14	-57.9%	-52.4%
GRF	GROUP FIVE	1997/06/30	1999/01/31	19	-75.9%	-59.3%
HAR	HARMONY GOLD MNG.	1996/07/31	1997/07/31	12	-51.1%	-51.1%
HAR	HARMONY GOLD MNG	1996/10/31	1998/03/31	17	-52.1%	-40.5%
HAR	HARMONY GOLD MNG	2003/12/31	2004/12/31	12	-52.5%	-52.5%
HCI	HOSKEN CONS.INV.	2000/07/31	2001/07/31	12	-53.8%	-53.8%
HCI	HOSKEN CONS.INV.	2000/09/30	2001/09/30	12	-51.8%	-51.8%
HCI	HOSKEN CONS.INV.	2001/01/31	2002/01/31	12	-53.6%	-53.6%
HWN	HOWDEN AFRICA	1997/06/30	1999/03/31	21	-73.3%	-53.0%
HDC	HUDACO	1997/06/30	1999/03/31	21	-70.4%	-50.1%
IDI	IDION TECH.	1999/12/31	2002/02/28	26	-97.3%	-81.2%
ILA	ILIAD AFRICA	1998/06/30	1999/07/31	13	-54.1%	-51.3%
INM	INMINS	1995/01/31	1996/03/31	14	-70.0%	-64.3%
INM	INMINS	1997/07/31	1998/11/30	16	-57.3%	-47.1%
INM	INMINS	1998/03/31	1999/03/31	12	-50.2%	-50.2%
IVT	INVICTA	1997/07/31	1999/05/31	22	-68.9%	-47.1%
JSC	JASCO ELTN	1998/07/31	1999/07/31	12	-67.9%	-67.9%
JSC	JASCO ELTN	1998/09/30	2001/05/31	32	-93.0%	-63.2%
JSC	JASCO ELTN.	2000/07/31	2001/09/30	14	-50.0%	-44.8%
JCD	JCI	1995/10/31	1998/10/31	24	-81.5%	-57.0%
JCD	JCI	1998/01/31	1999/02/28	13	-58.0%	-55.3%
JCD	JCI	1999/04/30	2000/04/30	12	-55.5%	-55.5%
JCD	JCI	1998/08/31	2000/09/30	13	-85.2%	-62.2%
JCD	JCI	1999/11/30	2000/12/31	13	-52.5%	-49.7%
JCD	JCI	2003/09/30	2004/12/31	15	-83.2%	-55.0%
JDG	JD GROUP	2001/02/28	2002/03/31	13	-65.8%	-62.7%
JDG	JD GROUP	2001/05/31	2002/09/30	16	-57.0%	-46.9%
JNC	JOHNNIC	1997/09/30	1998/09/30	12	-57.7%	-57.7%
JNC	JOHNNIC	2000/07/31	2001/07/31	12	-51.8%	-51.8%
JNC	JOHNNIC	2000/09/30	2001/09/30	12	-50.4%	-50.4%
KGM	KAGISO MEDIA	1998/05/31	1999/07/31	14	-70.0%	-64.4%
KAP	KAP INTL	1995/10/31	1996/10/31	12	-52.4%	-52.4%
KAP	KAP INTL.	1996/07/31	1997/07/31	12	-51.7%	-51.7%
KAP	KAP INTL	1996/10/31	1998/12/31	26	-90.6%	-66.4%
KAP	KAP INTL.	1998/02/28	1999/04/30	14	-64.8%	-59.2%
KAP	KAP INTL.	1999/02/28	2000/04/30	14	-60.8%	-56.0%
KAP	KAP INTL.	1999/12/31	2000/12/31	12	-55.6%	-55.6%
KAP	KAP INTL.	2000/03/31	2001/03/31	12	-51.5%	-51.5%
KAP	KAP INTL.	2000/06/30	2001/06/30	12	-56.9%	-56.9%
KAP	KAP INTL.	2000/08/31	2001/08/31	12	-54.3%	-54.3%
KAP	KAP INTL.	2001/07/31	2002/07/31	12	-58.1%	-58.1%
KAP	KAP INTL.	2001/11/30	2002/11/30	12	-58.1%	-58.1%
KAP	KAP INTL.	2002/12/31	2004/01/31	13	-50.0%	-47.3%
KAP	KAP INTL.	2003/05/31	2004/06/30	13	-53.8%	-51.0%
KAP	KAP INTL	2003/10/31	2004/10/31	12	-54.5%	-54.5%
KWV	KWV BELEGGINGS BPK.	1997/06/30	1998/06/30	12	-55.3%	-55.3%
KWV	KWV BELEGGINGS BPK	1997/08/31	1998/11/30	15	-68.7%	-60.5%
KWV	KWV BELEGGINGS BPK	1998/02/28	1999/02/28	12	-54.1%	-54.1%
LAR	LA GROUP	1999/05/31	2001/04/30	23	-85.9%	-64.0%
LAN	LA GROUP 'N'	1999/05/31	2001/04/30	23	-83.5%	-60.9%
LGL	LIBERTY GROUP	1998/03/31	1999/03/31	12	-52.3%	-52.3%
LON	LONMIN (JSE)	2002/03/31	2003/04/30	13	-56.5%	-53.6%
MCU	M CUBED HOLDINGS	2001/09/30	2002/09/30	12	-50.7%	-50.7%
MCU	M CUBED HOLDINGS	2001/12/31	2003/05/31	17	-56.4%	-43.5%
MDC	MEDI CLINIC	1997/08/31	1998/09/30	13	-57.7%	-54.8%
MDC	MEDI CLINIC	1998/05/31	1999/05/31	12	-55.4%	-55.4%
MRF	MERAFE RESOURCES	1998/05/31	1999/05/31	12	-65.6%	-65.6%
MTL	MERCANTILE BANK	1999/02/28	2001/03/31	25	-85.0%	-59.7%
MTL	MERCANTILE BANK	2001/03/31	2002/11/30	20	-64.0%	-45.9%
MES	MESSINA	2002/06/30	2003/06/30	12	-51.8%	-51.8%
MES	MESSINA	2003/09/30	2004/12/31	15	-58.6%	-50.6%
MTX	METOREX	1996/06/30	1998/02/28	20	-77.5%	-59.2%
MMG	MICROMEGA HDG.	2000/02/29	2001/02/28	12	-51.9%	-51.9%
MMG	MICROMEGA HDG	2001/05/31	2002/09/30	16	-84.7%	-75.5%
MMG	MICROMEGA HDG.	2001/11/30	2003/05/31	18	-80.7%	-66.6%
MMG	MICROMEGA HDG.	2002/10/31	2003/10/31	12	-61.0%	-61.0%
MLA	MITTAL STEEL SA.	1996/12/31	1997/12/31	12	-55.9%	-55.9%
MLA	MITTAL STEEL SA	1997/02/28	1998/03/31	13	-58.5%	-55.5%
MLA	MITTAL STEEL SA.	1997/06/30	1998/09/30	15	-52.5%	-44.8%
MLA	MITTAL STEEL SA	1999/11/30	2000/11/30	12	-50.2%	-50.2%
MOB	MOBILE INDUSTRIES	1995/02/29	1998/01/31	23	-60.6%	-38.4%
MOB	MOBILE INDUSTRIES	1998/02/28	1999/08/31	18	-71.2%	-58.3%
MOB	MOBILE INDUSTRIES	1998/10/31	1999/12/31	14	-55.1%	-49.6%
MOB	MOBILE INDUSTRIES	1999/03/31	2000/05/31	14	-62.9%	-57.2%
MOB	MOBILE INDUSTRIES	1999/07/31	2000/07/31	12	-61.7%	-61.7%
MBN	MOBILE INDUSTRIES 'N'	1998/02/28	1999/08/31	18	-69.5%	-54.7%

Table 3.2. Sample Extreme Losers

Continued.

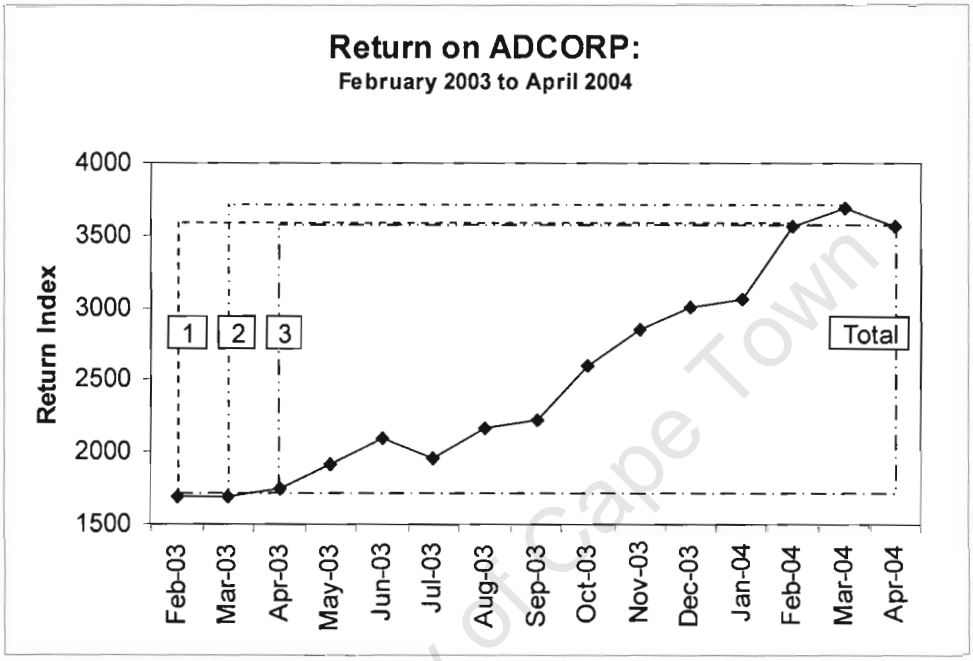
Start Date	End Date	Length (Months)	Total Return	Annualized Return	Share Code	Company Name	Start Date	End Date	Length (Months)	Total Return	Annualized Return
1998/11/30	1999/11/30	12	-68.9%	-68.9%	SNT	SANTAM	1997/08/31	1998/09/30	13	-59.4%	-56.5%
1999/03/31	2000/05/31	14	-59.6%	-54.0%	SAP	SAPPI	1997/01/31	1998/01/31	12	-50.2%	-50.2%
1999/07/31	2000/07/31	12	-60.7%	-60.7%	SAP	SAPPI	1997/08/31	1998/08/31	12	-53.8%	-53.8%
1996/02/29	1997/02/28	12	-55.8%	-55.8%	SFN	SASFIN	1998/05/31	1999/06/30	13	-53.6%	-50.8%
1999/11/30	2000/11/30	12	-54.8%	-54.8%	SFN	SASFIN	1999/05/31	2000/07/31	14	-53.2%	-47.8%
2000/02/29	2001/03/31	13	-60.3%	-57.3%	SOL	SASOL	1997/08/31	1998/12/31	16	-62.1%	-51.7%
2000/07/31	2001/09/30	14	-57.5%	-51.9%	SCN	SCHARRIG MINING	1995/04/30	1996/04/30	12	-50.7%	-50.7%
1995/12/31	1997/02/28	14	-60.1%	-54.7%	SCN	SCHARRIG MINING	1995/07/31	1996/08/31	13	-51.8%	-49.0%
1997/08/31	1998/08/31	12	-59.2%	-59.2%	SCN	SCHARRIG MINING	1995/10/31	1997/03/31	17	-56.1%	-44.1%
1997/12/31	1999/05/31	17	-55.8%	-43.8%	SCN	SCHARRIG MINING	1997/03/31	1998/03/31	12	-53.9%	-53.9%
1999/03/31	2000/03/31	12	-53.3%	-53.3%	SCN	SCHARRIG MINING	1997/05/31	1998/08/31	15	-69.8%	-61.6%
1999/05/31	2001/05/31	24	-81.6%	-57.1%	SCN	SCHARRIG MINING	1997/10/31	1999/02/28	16	-76.0%	-65.8%
2000/03/31	2001/03/31	12	-55.0%	-55.0%	SCN	SCHARRIG MINING	1998/04/30	1999/05/31	13	-66.4%	-63.5%
2000/08/31	2001/09/30	13	-57.8%	-54.9%	SCN	SCHARRIG MINING	1998/07/31	1999/07/31	12	-54.0%	-54.0%
1997/02/28	1998/02/28	12	-52.8%	-52.8%	SCN	SCHARRIG MINING	1998/09/30	1999/11/30	14	-54.2%	-48.8%
2003/11/30	2004/11/30	12	-64.5%	-64.5%	SRN	SEARDEL INV.	1998/04/30	1999/04/30	12	-53.5%	-53.5%
1997/08/31	1998/09/30	13	-56.8%	-53.9%	SKJ	SEKUNJALO INVS.	1999/05/31	2000/07/31	14	-74.0%	-68.5%
1997/08/31	1998/10/31	14	-58.5%	-53.0%	SKJ	SEKUNJALO INVS	1999/09/30	2001/05/31	20	-72.3%	-53.7%
2000/02/29	2001/05/31	15	-66.8%	-58.5%	STO	SETPOINT TECH.	1998/07/31	1999/08/31	13	-68.9%	-66.0%
2000/07/31	2001/10/31	15	-69.8%	-61.7%	STO	SETPOINT TECH	1998/10/31	2001/08/31	34	-95.8%	-67.4%
2001/01/31	2002/03/31	14	-68.6%	-62.9%	SOV	SOVEREIGN FOOD INVS	1998/01/31	1999/01/31	12	-52.6%	-52.6%
1997/09/30	1998/09/30	12	-51.3%	-51.3%	SOV	SOVEREIGN FOOD INVS.	1998/04/30	1999/10/31	18	-73.3%	-58.6%
1998/02/28	1999/02/28	12	-51.3%	-51.3%	SOV	SOVEREIGN FOOD INVS.	1998/12/31	1999/12/31	12	-58.3%	-58.3%
1998/05/31	1999/05/31	12	-59.9%	-59.9%	SOV	SOVEREIGN FOOD INVS	1999/02/28	2000/08/31	18	-71.3%	-56.4%
1996/05/31	1997/07/31	14	-50.7%	-45.5%	SOV	SOVEREIGN FOOD INVS.	1999/11/30	2000/11/30	12	-53.3%	-53.3%
1998/04/30	1999/08/31	16	-76.8%	-66.6%	SPS	SPESCOM	1998/07/31	1999/07/31	12	-50.0%	-50.0%
1998/10/31	1999/10/31	12	-52.0%	-52.0%	SPS	SPESCOM	1999/03/31	2001/04/30	25	-88.1%	-63.9%
1997/08/31	1998/08/31	12	-51.1%	-51.1%	SPS	SPESCOM	2001/02/28	2003/01/31	23	-75.9%	-52.4%
1998/03/31	1999/03/31	12	-50.3%	-50.3%	SPS	SPESCOM	2002/04/30	2003/04/30	12	-50.6%	-50.6%
2000/02/29	2001/04/30	14	-64.8%	-59.1%	SPG	SUPER GROUP	1998/07/31	1999/07/31	12	-51.3%	-51.3%
1997/02/28	1998/02/28	12	-50.8%	-50.8%	BSB	THE HOUSE OF BUSBY	1998/05/31	1999/06/30	13	-56.5%	-53.6%
1997/05/31	1998/10/31	17	-68.3%	-55.5%	BSB	THE HOUSE OF BUSBY	2000/01/31	2001/04/30	15	-59.5%	-51.4%
2000/03/31	2001/03/31	12	-51.7%	-51.7%	BSB	THE HOUSE OF BUSBY	2000/06/30	2001/06/30	12	-52.4%	-52.4%
2000/06/30	2001/12/31	18	-49.2%	-36.3%	BSB	THE HOUSE OF BUSBY	2000/08/31	2001/08/31	12	-53.0%	-53.0%
2001/02/28	2002/02/28	12	-52.0%	-52.0%	BSB	THE HOUSE OF BUSBY	2000/12/31	2001/12/31	12	-51.3%	-51.3%
1998/10/31	1999/10/31	12	-54.2%	-54.2%	TIW	TIGER WHEELS	1999/04/30	2000/06/30	14	-55.0%	-49.6%
1998/12/31	1999/12/31	12	-52.9%	-52.9%	TIW	TIGER WHEELS	1999/09/30	2000/12/31	15	-46.4%	-39.2%
1999/02/28	2000/06/30	16	-63.5%	-53.0%	TIW	TIGER WHEELS	2000/03/31	2001/03/31	12	-53.3%	-53.3%
1999/11/30	2001/08/31	21	-61.1%	-41.7%	TNT	TONGAAT HLT GP	1997/09/30	1998/09/30	12	-54.0%	-54.0%
1997/07/31	1998/09/30	14	-57.9%	-52.3%	TRT	TOURISM INV	1999/03/31	2001/02/28	23	-69.4%	-46.1%
1998/02/28	1999/11/30	21	-79.4%	-59.4%	TDH	TRADEHOLD	2000/11/30	2001/11/30	12	-58.7%	-58.7%
1998/02/28	1999/08/31	18	-73.2%	-58.4%	TDH	TRADEHOLD	2001/01/31	2002/01/31	12	-55.4%	-55.4%
1998/10/31	1999/11/30	13	-63.5%	-60.5%	TSX	TRANS HEX GROUP	1997/03/31	1998/03/31	12	-56.3%	-56.3%
2000/03/31	2001/03/31	12	-52.5%	-52.5%	TSX	TRANS HEX GROUP	1997/05/31	1998/09/30	16	-66.3%	-55.8%
2000/03/31	2001/04/30	13	-61.0%	-58.0%	TPC	TRANSPACO	1997/11/30	1998/11/30	12	-55.4%	-55.4%
2000/07/31	2003/05/31	34	-96.9%	-70.5%	TPC	TRANSPACO	1998/01/31	1999/02/28	13	-46.1%	-43.7%
1995/01/31	1996/01/31	12	-51.1%	-51.1%	TPC	TRANSPACO	1998/05/31	1999/07/31	14	-54.7%	-49.3%
1995/08/31	1996/12/31	16	-60.0%	-49.7%	TPC	TRANSPACO	2000/08/31	2001/12/31	16	-68.8%	-58.2%
1996/05/31	1997/05/31	12	-51.7%	-51.7%	TRE	TRENCOR	1998/02/28	1999/06/30	16	-58.5%	-48.3%
1996/12/31	1998/10/31	22	-65.9%	-44.4%	TRE	TRENCOR	1998/11/30	1999/12/31	13	-55.8%	-52.9%
1999/02/28	2000/04/30	14	-51.1%	-45.8%	TRE	TRENCOR	1999/02/28	2000/07/31	17	-59.4%	-47.0%
1996/10/31	1998/10/31	24	-87.5%	-64.6%	TRE	TRENCOR	1999/09/30	2000/09/30	12	-54.3%	-54.3%
1997/12/31	1999/01/31	13	-50.8%	-48.0%	UCS	UCS GROUP	1999/05/31	2000/05/31	12	-51.7%	-51.7%
2003/07/31	2004/12/31	17	-62.6%	-50.0%	UCS	UCS GROUP	1999/10/31	2001/04/30	18	-78.3%	-63.9%
1998/05/31	1999/05/31	12	-50.8%	-50.8%	UCS	UCS GROUP	2000/08/31	2001/08/31	12	-52.6%	-52.6%
1998/07/31	1999/07/31	12	-60.6%	-60.6%	VLE	VALUE GROUP	1999/09/30	2000/09/30	12	-51.3%	-51.3%
1998/09/30	1999/11/30	14	-64.8%	-59.1%	VLE	VALUE GROUP	2000/02/29	2001/04/30	14	-60.5%	-54.9%
1999/03/31	2000/03/31	12	-53.7%	-53.7%	VLE	VALUE GROUP	2000/09/30	2001/09/30	12	-58.3%	-58.3%
1999/08/31	2000/08/31	12	-51.9%	-51.9%	VLE	VALUE GROUP	2001/03/31	2002/03/31	12	-51.3%	-51.3%
2000/01/31	2001/01/31	12	-50.5%	-50.5%	WES	WESCO INVESTMENTS	1997/09/30	1998/12/31	15	-65.6%	-57.4%
1997/06/30	1998/09/30	15	-65.7%	-57.5%	WES	WESCO INVESTMENTS	1998/02/28	1999/02/28	12	-50.1%	-50.1%
2002/03/31	2003/04/30	13	-57.9%	-55.0%	WAR	WESTERN AREAS	1996/05/31	1997/07/31	14	-55.3%	-49.8%
1998/02/28	1999/02/28	12	-56.4%	-56.4%	WAR	WESTERN AREAS	1996/10/31	1997/12/31	14	-62.8%	-57.2%
1996/08/31	1997/08/31	12	-61.0%	-61.0%	WAR	WESTERN AREAS	1997/02/28	1998/02/28	12	-52.6%	-52.6%
1996/11/30	1998/02/28	15	-55.9%	-48.3%	WAR	WESTERN AREAS	1997/08/31	1998/08/31	12	-65.7%	-65.7%
1997/09/30	1999/07/31	22	-73.1%	-51.1%	WBO	WILSON BAY HLM OVC	1997/09/30	1999/02/28	17	-66.5%	-54.0%
1999/12/31	2000/12/31	12	-55.0%	-55.0%	WBO	WILSON BAY HLM OVC	1998/05/31	1999/05/31	12	-52.2%	-52.2%
2001/02/28	2002/02/28	12	-50.3%	-50.3%	WNH	WINHOLD	1997/06/30	1999/07/31	25	-83.9%	-58.3%
2001/07/31	2003/07/31	24	-76.0%	-51.1%	WNH	WINHOLD	1998/11/30	1999/11/30	12	-50.2%	-50.2%

It is evident from this table that some of the annualized returns do not meet the 100 percent return for extreme winners and negative 50 percent return for extreme losers. The reason for this is illustrated by considering the return on Adcorp between 28 February 2003 and 30 April 2004. The return index on this share is shown by the graph below.

Figure 3.3. Extreme Performance of Adcorp: February 2003 to April 2004

The graph below shows that consecutive periods of extreme performance may result in an annualized return of less than 100 percent. The return index on Adcorp on the JSE Securities Exchange from 28 February 2003 until 30 April 2004 is used as an illustration. The following returns are indicated on the graph:

1.	28 February 2003 – 28 February 2003	12 months	111.06%
2.	31 March 2003 – 31 March 2004	12 months	118.60%
3.	30 April 2003 – 30 April 2004	12 months	103.79%
Total.	28 February 2003 – 30 April 2004	14 months	111.06%



In Figure 3.3. above, the 12 month return is (1) 111 percent from 28 February 2003 to 28 February 2004, (2) 119 percent from 31 March 2003 to 31 March 2004, and (3) 104 percent from 30 April 2003 to 30 April 2004. Together these returns result in a total return of 111% over the 14 month period from 28 February 2003 to 30 April 2004. However, when this total return is annualized, a return of 90 percent results – far below the extreme performance criterion of 100 percent. This is because the performance in the final two months does not adequately compensate the investor for holding the share for this additional time period.

Lists of every 12 month period of extreme performance included in the sample are included in the appendix. Appendices A.4. and A.7. show extreme performance sorted by company for winners and losers respectively. Appendices A.5. and A.8. present this data sorted by date for winners and losers. Finally, Appendices A.6. and A.9. show extreme performance data sorted by magnitude of 12 month return.

Table 3.3. below summarizes the characteristics of the extreme performers included in the study. As can be seen from the table there are 2023 instances when a stock at least doubles in a 12 month period, resulting in 24 276 performance months. However, if a separate extreme performance signals occurs for the same company in two consecutive months, these extreme performance months will overlap. Ignoring these overlaps, there are 7807 unique company months of extreme performance for winners. The sample of extreme winners includes 169 different companies. This large sample of extreme winners implies that there should be sufficient data to conduct a study into the characteristics of extreme winners.

The largest 12 month return in the sample of extreme winners is 2200 percent while the smallest is 100 percent. This leads to an average return of 184 percent and a median return of 141 percent. These observations are highly variable, with a standard deviation of 139 percent. Interestingly, every month in the sample contains at least one commencement of extreme performance. In fact, on average 18.73 extreme performances start every month.

By considering losers it is apparent that there are 1416 separate instances of extreme loss, implying 16 992 extreme performance months. Ignoring overlaps, this figure is reduced to unique 5397 company months, including 141 different companies. Although the number of extreme loss observations is substantially less than the extreme gain observations, there are still a significant number of observations.

The most extreme return for the loser shares is negative 96 percent while the least extreme is negative 50 percent. The leads to an average return of negative 65 percent and a median return of negative 63 percent. These returns seem less volatile than the winner returns with a standard deviation of only 11 percent. Once again at least one extreme loss begins in every month of the sample, with an average of 13.11 commencements in every month.

Table 3.3. Extreme Performer Summary

The table lists some summary characteristics for all extreme winners and extreme losers on the JSE Securities Exchange from January 1995 until December 2004 included in this study. An extreme winner is defined as a stock which at least doubles in a 12 month period while an extreme loser is defined as a stock which at least halves in value in a 12 month period.

	Extreme Winners	Extreme Losers
Number of 12-month extreme performance periods	2023	1416
Number of extreme performance company months	24276	16992
Number of unique extreme performance company months	7807	5397
Number of companies included	169	141
Most extreme return	2199.76%	-95.61%
Least extreme return	100.00%	-50.00%
Percentage of months when an extreme performance begins	100.00%	100.00%
Average number of starts at each date	18.73	13.11
Summary Statistics		
Mean	184.36%	-65.14%
Median	141.37%	-62.98%
Standard Deviation	138.92%	11.15%
Kurtosis	50.20	-0.45
Skewness	5.57	-0.63

3.6 Choice and categorization of variables

This study aims to produce results which are both economically justifiable and economically applicable. The variables used are therefore not filtered out of a huge database in a process similar to "data snooping". Instead focus is placed on those variables which are either identified in past literature as important or where economic intuition strongly suggests a possible relationship.

The variables employed in this study are therefore derived from two sources. Firstly, the literature review identifies a number of variables and signals that have been found to significantly influence returns. Data on all of these factors is collected for all shares. It is not expected that all of these variables prove relevant as many have been identified outside of the context of extreme performance. In addition, even the variables identified in the extreme performance literature have not been verified in a South African context and a comparison of findings between countries will therefore be interesting.

Secondly, certain variables have not specifically been identified as significantly influencing returns but economic sense suggests their inclusion for the sake of completeness. These, together with a list of previously identified variables, the researchers who identified them, their categorizations of the variables as well as any relevant screen that is found to predict extreme performance can be found in Appendix A.10.

All company data is collected from Datastream while some macroeconomic data is obtained from Inet Bridge. In cases where the exact variables identified in previous studies are not available, similar variables are used as a proxy for them. If a variable does truly influence returns and is not sample-specific, small variations in its derivation should not influence its significance.

Similar to Reinganum (1988), the variables to be examined are separated into five categories.

(i) Information variables

These variables convey the investment patterns of investors which may have more information due to either their position within the company or the extent of research into a company. For example variables describing insider trading patterns or proportion of management ownership may convey information about the sentiments of the group of investors with a degree of asymmetric information. Variables describing institutional ownership may reveal some findings of the research departments of these investors.

(ii) Valuation Measures

These variables describe different aspects of security pricing and their relation to the underlying value of a company. This category includes measures such as the price-earnings ratio, beta, market-to-book values and size. However, since the distribution of market values of companies is non-normal (see Section 4.3), the natural logarithm of market value has been used instead.

(iii) Technical Indicators

Technical analysis is an approach to forecasting prices which examines patterns of price change, rates of change, and changes in volume of trading among other criteria, without regard to underlying fundamental market factors. Technical indicators are those trends that technical analysts use to predict future price movements of securities. These include variables such as relative strength, momentum, age and volume traded.

(iv) Fundamental Measures

Fundamental analysis is a method of security valuation which involves examining the company's financials and operations, especially sales, earnings, growth potential, assets, debt, management, products, and competition. Fundamental analysis takes into consideration only those variables that are directly related to the company itself, rather than the overall state of the market or technical analysis data. A great deal of previous literature on this subject has caused it to be the largest category.

These fundamental accounting measures are in turn broken up into five categories:

i. *Profitability measures* – these variables measure the degree to which sales are translated into profits. They include measures such as margins and sales growth.

ii. *Performance measures* – these variables are slightly different to profitability measures in that they consider the result of the profitability measures in terms of earnings performance. This category includes variables such as earnings growth, earnings and dividends per share, return on equity and return on assets. Included in this category are also measures of expected performance such as growth forecasts and forecast revisions.

iii. *Leverage measures* – these variables measure the degree and efficiency of the use of debt in the company and include things such as capital gearing and cash flow to debt.

iv. *Liquidity measures* – these include variables which examine the relationship between short-term assets and liabilities in order to

determine the liquidity position of the relevant company. This category include the current and quick ratios.

v. *Efficiency measures* – this last category includes variable which measure the efficiency of the assets employed in the company. The variables include asset turnover, measures of working capital efficiency (such as inventory turnover, accounts receivable growth relative to sales and net trade cycle) and measures of labour productivity.

One important consideration concerning earnings growth warrants mentioning. The traditional earnings growth formula is:

$$g = \frac{E_t - E_{t-1}}{E_{t-1}} \qquad (3.1)$$

If a circumstance arises where a company progresses from negative to positive earnings, errors may be introduced when calculating earnings growth. For example, if a company makes a loss of R100 in year *t -1* and a profit of R100 in year *t*, the one-year earnings growth will be -200 percent even though the company has experienced a vast improvement. In order to overcome this problem, earnings growth is calculated by maintaining the change in earnings in the numerator but setting the denominator equal to the share price.

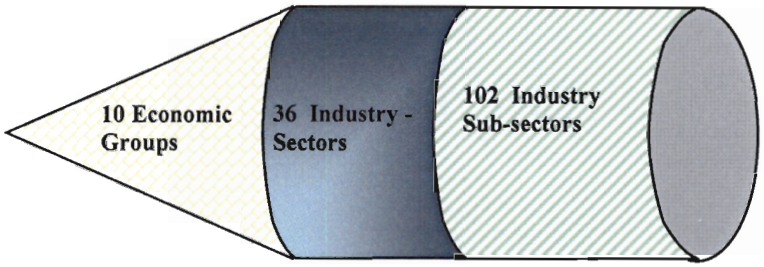
(v) Industry Position

Using a company as its own base for comparison may not be enough. Therefore it is important to look at industry position in areas such as earnings growth, sales growth, margins and returns. In addition to this data for each individual company, data on industry classifications is needed in order to compute industry averages.

This thesis uses the FTSE Global Classification System for categorizing stocks into industries, illustrated in Figure 3.4 below.

Figure 3.4. FTSE Global Classification System

The figure below shows how the FTSE Global Classification System breaks down stocks. The market is first decomposed into 10 economic groups. These are further broken down into 36 industry sectors. Finally, these are further split into 102 industry sub-sectors.



Source: Visser, 2005

Industry averages are calculated on the "Economic Groups" level for the purposes of this thesis. This is because top performance within an industry is more significant when the industry is larger. Since extreme performers have are found to rank extremely high within industries, a choice of such an industry categorization is justifiable. In addition, the South African market has substantially fewer securities than the US market (where previous studies have been conducted), providing further validation for the need for industries with a larger scope in this study.

The FTSE Global Classification System has been chosen over the newer Industry Classification Benchmark (ICB) as this will only be formally implemented on the JSE Securities Exchange on 31 December 2005 (Visser, 2005). Therefore, both at the time of writing and over the entire sample period, the older method applies.

The economic groups are as follows:

Alpha Code	Economic Group
RESO	Resources
BIND	Basic Industries
GIND	General Industries
CCGD	Cyclical Consumer Goods
NCCG	Non-Cyclical Consumer Goods
CSEV	Cyclical Services

NCSV	Non-Cyclical Services
FINI	Financials
UTIL	Utilities
ITCH	Information Technology

For a breakdown of economic groups into relevant industrial sectors and industrial subsectors, see Appendix A.11.

Due to the Findi-Resi dichotomy on the JSE Securities Exchange, two relative strength ratios are calculated for each security. The first compares performance to that of all shares in the experimental subsample, while the second compares performance only to the shares in the subsample in the same index.

The categorization of all variables to be examined along with the data requirements from Datastream are contained in Table 3.4 below. To validate the derivation of the data used and to ensure appropriate data is used, the Datastream definitions of all variables is included in Appendix A.12.

Table 3.4. Variables and Ratios to be Included in Study

The table shows the variables and ratios included for study in this thesis along with the codes by which they are referred. The table also includes the classification of all variables into each of the five categories of variables included for study. The final column of the table displays the formula for calculating each variable or ratio from variables available on Datastream International. Definitions of these Datastream variables are available in Appendix A.12.

Category		Code	Variable	Formula
Information Variables		INST_OWN	Institutional ownership as a % of total shares	[Institutional Holdings]
		MAN_OWN	Share buybacks / management ownership as a % of total shares	[Strategic Holdings]
Valuation Measures		PE	Price-Earnings Ratio	[Price-earnings ratio-Adjusted]
		EY	Earnings Yield	[EPS] / [Price-Adjusted]
		MV	Size	[Market Value]
		LN_MV	Size Log	Ln [Market Value]
		BETA	Beta	[Beta]
		MTB	Market to Book Value	[Market to Book Value]
Technical indicators		VOL_3	1-month average Daily trading volume compared to 3-month average	[Turnover by Volume] / [3-month Average Turnover by Volume]
		LN_VOL_3	Log of 1-month average Daily trading volume compared to 3-month average	Ln ([Turnover by Volume] / [3-month Average Turnover by Volume])
		VOL_6	1-month average Daily trading volume compared to 6-month average	[Turnover by Volume] / [6-month Average Turnover by Volume]
		LN_VOL_6	Log of 1-month average Daily trading volume compared to 6-month average	Ln ([Turnover by Volume] / [6-month Average Turnover by Volume])
		VOL_12	1-month average Daily trading volume compared to 12-month average	[Turnover by Volume] / [12-month Average Turnover by Volume]
		LN_VOL_12	Log of 1-month average Daily trading volume compared to 12-month average	Ln ([Turnover by Volume] / [12-month Average Turnover by Volume])
		VOL_18	1-month average Daily trading volume compared to 18-month average	[Turnover by Volume] / [18-month Average Turnover by Volume]
		LN_VOL_18	Log of 1-month average Daily trading volume compared to 18-month average	Ln ([Turnover by Volume] / [18-month Average Turnover by Volume])
		VOL_24	1-month average Daily trading volume compared to 24-month average	[Turnover by Volume] / [24-month Average Turnover by Volume]
		LN_VOL_24	Log of 1-month average Daily trading volume compared to 24-month average	Ln ([Turnover by Volume] / [24-month Average Turnover by Volume])
		SDEV_VOL	Historical daily volatility over past 3 months compared to 12 months before	Standard Deviation of [Turnover by Volume] for (t-3) to (t) / Standard Deviation of [Turnover by Volume] for (t-15) to (t-4)
		LN_SDEV_VOL	Log of Historical daily volatility over past 3 months compared to 12 months before	Ln (Standard Deviation of [Turnover by Volume] for (t-3) to (t) / Standard Deviation of [Turnover by Volume] for (t-15) to (t-4))
		VOLtNOSHARES	Average turnover over past 6 months (no of shares traded / total shares outstanding)	[Turnover by Volume] / [Number of Shares]
		LN_VOLtNOSHARES	Log of Average turnover over past 6 months (no of shares traded / total shares outstanding)	Ln ([Turnover by Volume] / [Number of Shares])
		AGE	Age (in years)	([Date] - [Base Date]) / 360
		MOM_1	1-month momentum	([Total Return]$_t$ - [Total Return]$_{t-1}$]) / [Total Return]$_{t-1}$]
		MOM_3	3-month momentum	([Total Return]$_t$ - [Total Return]$_{t-3}$]) / [Total Return]$_{t-3}$]
		MOM_6	6-month momentum	([Total Return]$_t$ - [Total Return]$_{t-6}$]) / [Total Return]$_{t-6}$]
		MOM_12	12-month momentum	([Total Return]$_t$ - [Total Return]$_{t-12}$]) / [Total Return]$_{t-12}$]
		MOM_18	18-month momentum	([Total Return]$_t$ - [Total Return]$_{t-18}$]) / [Total Return]$_{t-18}$]
		MOM_24	24-month momentum	([Total Return]$_t$ - [Total Return]$_{t-24}$]) / [Total Return]$_{t-24}$]
		NOSHARES	Shares outstanding	[Number of Shares]
		LN_NOSHARES	Log of Shares outstanding	Ln ([Number of Shares])
		MAXP_12	Comparison of price to 12-month high	[Price Adjusted] / Max of [Price adjusted] for (t - 12) to (t)
		MAXP_24	Comparison of price to 24-month high	[Price Adjusted] / Max of [Price adjusted] for (t - 24) to (t)
		MAXP_60	Comparison of price to 5 year high	[Price Adjusted] / Max of [Price adjusted] for (t - 60) to (t)
Fundamental Measures	Profitability	PRETAX_PM	Pretax Profit Margin	[Pre-tax Profit Margin]
		CH_SALES	% change in sales	([Total Sales]$_t$ - [Total Sales]$_{t-12}$) / [Total Sales]$_{t-12}$
		GM	gross margin ratio	[Gross Profit on Sales] / [Total Sales]
		CH_EBTtSALES	% change in (pretax income / sales)	([Pretax Profits]$_t$ / [Total Sales]$_t$ – [Pretax Profits]$_{t-12}$ / [Total Sales]$_{t-12}$) / ([Pretax Profits]$_{t-12}$ / [Total Sales]$_{t-12}$)
		SALEStCASH	sales to total cash	[Total Sales] / [Total Cash and Equivalent]
		OPINCtTA	operating income / total assets	[Operating Profit-Adjusted] / [Total Assets]
		CH_SALESIGM	% change sales - % change gross margin	(([Total Sales]$_t$ - [Total Sales]$_{t-12}$) / [Total Sales]$_{t-12}$) - (([Gross Profit on Sales]$_t$ - [Gross Profit on Sales]$_{t-12}$) / [Gross Profit on Sales]$_{t-12}$)
	Performance	EARN	Earnings	[Earned for Ordinary-Adjusted]
		EARNG_3	3-month Earnings Growth	[Earnings per Share]$_t$ - [Earnings per Share]$_{t-3}$ / [Price-Adjusted]$_{t-3}$
		EARNG_6	6-month Earnings Growth	[Earnings per Share]$_t$ - [Earnings per Share]$_{t-6}$ / [Price-Adjusted]$_{t-6}$
		EARNG_12	1-year Earnings Growth	[Earnings per Share]$_t$ - [Earnings per Share]$_{t-12}$ / [Price-Adjusted]$_{t-12}$
		EARNG_24	2-year Earnings Growth	[Earnings per Share]$_t$ - [Earnings per Share]$_{t-24}$ / [Price-Adjusted]$_{t-24}$
		EARNG_60	5-year Earnings Growth	([Earnings per Share]$_t$ - [Earnings per Share]$_{t-60}$) / [Price-Adjusted]$_{t-60}$
		EPS	Annual EPS	[Earnings per Share]
		LN_EPS	Log of Annual EPS	Ln ([Earnings per Share])
		ROE	Annual Return on Equity	[Return on Equity]
		CH_DPS	% change in dividend per share	([Dividends per Share]$_t$ - [Dividends per Share]$_{t-12}$) / [Dividends per Share]$_{t-12}$
		CH_ROE	change in Return on Equity	[Return on Equity]$_t$ - [Return on Equity]$_{t-12}$
		ROA	return on total assets	[Earned for Ordinary-Adjusted] / [Total Assets]
		DIVtCF	dividend / cash flow	[Ordinary Dividends-Net] / [Net Cash Flow]
		DY	dividend yield	[Dividends per Share] / [Price Adjusted]
		GFORECAST_12	1 year earnings growth forecast	[12-Month Forward Growth Rate]$_t$
		REVISION_12	% 1 year earnings forecast revision	([Earnings$_{t-12}$]$_t$ - [Earnings$_{t-24}$]$_{t-12}$) / [Earnings$_{t-24}$]$_{t-12}$
		REVISION_24	% 2 year earnings forecast revision	([Earnings$_{t-24}$]$_t$ - [Earnings$_{t-36}$]$_{t-12}$) / [Earnings$_{t-36}$]$_{t-12}$
		REVISION_36	% 3 year earnings forecast revision	([Earnings$_{t-36}$]$_t$ - [Earnings$_{t-48}$]$_{t-12}$) / [Earnings$_{t-48}$]$_{t-12}$

Table 3.4. Variables and Ratios to be Included in Study

Continued.

Category		Code	Variable	Formula
Fundamental Measures (continued)	Leverage	CAPGEAR	Capital gearing	[Capital Gearing]
		CH_CAPGEAR	% change in Capital Gearing	([Capital Gearing]$_t$ - [Capital Gearing]$_{t-12}$) / [Capital Gearing]$_{t-12}$
		CASHtDEBT	cash flow to debt	[Net Cash Flow] / [Total Debt]
	Liquidity	CH_CURRENT	% change in current ratio	([Working Capital Ratio]$_t$ - [Working Capital Ratio]$_{t-12}$) / [Working Capital Ratio]$_{t-12}$
		CH_QUICK	% change in quick ratio	([Quick Assets Ratio]$_t$ - [Quick Assets Ratio]$_{t-12}$) / [Quick Assets Ratio]$_{t-12}$
	Efficiency	ACCtTA	Accruals / Total Assets	(([Total Current Assets]$_t$ – [Total Current Assets]$_{t-12}$) – ([Total Cash and Equivalent]$_t$ – [Total Cash and Equivalent]$_{t-12}$) – ([Total Current Liabilities]$_t$ – [Total Current Liabilities]$_{t-12}$) + ([Total Loan Capital]$_t$ – [Total Loan Capital]$_{t-12}$) – [Depreciation]$_t$ – [Amortisation of Intangibles]$_t$) / [Total Assets]$_t$
		CH_CF	% Change in cash flow	([Cash Flow per Share]$_t$ - [Cash Flow per Share]$_{t-12}$) / [Cash Flow per Share]$_{t-12}$
		CH_ARtSALES	% change in receivables relative to change in sales	([Trade Debtors]$_t$ – [Trade Debtors]$_{t-12}$) / ([Total Sales]$_t$ – [Total Sales]$_{t-12}$)
		CH_ASSTURN	% Change in asset turnover ratio	([Total Sales]$_t$ / [Total Assets]$_t$ – [Total Sales]$_{t-12}$ / [Total Assets]$_{t-12}$) / ([Total Sales]$_{t-12}$ / [Total Assets]$_{t-12}$)
		CH_INVTURN	% change in inventory turnover	([Total Sales]$_t$ / [Total Stocks and WIP]$_t$) - ([Total Sales]$_{t-12}$ / [Total Stocks and WIP]$_{t-12}$)
		INVtTA	inventory / total assets	[Total Stocks and WIP]$_t$ / [Total Assets]$_t$
		CH_INVtTA	% change in (inventory / total assets)	([Total Stocks and WIP]$_t$ / [Total Assets]$_t$) - ([Total Stocks and WIP]$_{t-12}$ / [Total Assets]$_{t-12}$)
		CH_INV	% change in inventory	([Total Stocks and WIP]$_t$ - [Total Stocks and WIP]$_{t-12}$) / [Total Stocks and WIP]$_{t-12}$
		CH_DEP	% change in depreciation	([Depreciation]$_t$ - [Depreciation]$_{t-12}$) / [Depreciation]$_{t-12}$
		LN_SALEStCASH	Log of sales to total cash	Ln ([Total Sales] / [Total Cash and Equivalent])
		CH_TA	% change in total assets	([Total Assets]$_t$ - [Total Assets]$_{t-12}$) / [Total Assets]$_{t-12}$
		WCtTA	working capital / total assets	[Total Current Assets] / [Total Assets]
		CH_INVtSALES	% change inventory - % change sales	(([Total Stocks and WIP]$_t$ - [Total Stocks and WIP]$_{t-12}$) / [Total Stocks and WIP]$_{t-12}$) - (([Total Sales]$_t$ - [Total Sales]$_{t-12}$) / [Total Sales]$_{t-12}$)
		CH_ARtSALES	% change AR - % change sales	(([Trade Debtors]$_t$ - [Trade Debtors]$_{t-12}$) / [Trade Debtors]$_{t-12}$) - (([Total Sales]$_t$ - [Total Sales]$_{t-12}$) / [Total Sales]$_{t-12}$)
		CH_SAtSALES	% change S + A - % change sales	(([Selling and Administrative Expenses]$_t$ - [Selling and Administrative Expenses]$_{t-12}$) - [Selling and Administrative Expenses]$_{t-12}$) / (([Total Sales]$_t$ - [Total Sales]$_{t-12}$) / [Total Sales]$_{t-12}$)
		LABOUR	Labour Force	([Total Sales]$_{t-12}$ / [Total Number of Employees]$_{t-12}$ – [Total Sales]$_t$ / [Total Number of Employees]$_t$) / ([Total Sales]$_{t-12}$ / [Total Number of Employees]$_{t-12}$)
		NTC	Net Trade Cycle	([Total Stocks and WIP] + [Trade Debtors] - [Trade Creditors]) x 365 / [Total Sales]
Industry Position		RSTRENGTH	12-month Relative strength ratio (where Market = Alsi AND Findi / Resi)	([Number of Securities in Market] - Rank { ([Return Index]$_t$ - [Return Index]$_{t-12}$) / [Return Index]$_{t-12}$; Market } + 1) / [Number of Securities in Market]
		CH_RSTRENGTH	Change in 12-month Relative Strength Ratio (where Market = Alsi AND Findi / Resi)	([Number of Securities in Market] - Rank { ([Return Index]$_t$ - [Return Index]$_{t-12}$) / [Return Index]$_{t-12}$; Market } + 1) / [Number of Securities in Market]) - ([Number of Securities in Market] - Rank { ([Return Index]$_{t-12}$ - [Return Index]$_{t-24}$) / [Return Index]$_{t-24}$; Market } + 1) / [Number of Securities in Market])
		WRSTRENGTH	Weighted Relative Strength Ratio (where Market = Alsi AND Findi / Resi)	([Number of Securities in Market] - Rank { 0.4 x (([Return Index]$_t$ - [Return Index]$_{t-3}$) / [Return Index]$_{t-3}$) + 0.2 x (([Return Index]$_{t-3}$ - [Return Index]$_{t-6}$) / [Return Index]$_{t-6}$) + 0.2 x (([Return Index]$_{t-6}$ - [Return Index]$_{t-9}$) / [Return Index]$_{t-9}$) + 0.2 x (([Return Index]$_{t-9}$ - [Return Index]$_{t-12}$); Market } + 1) / [Number of Securities in Market]
		POS_SALES	Sales growth (industry rating)	Rank { ([Earned for Ordinary-Adjusted]$_t$ - [Earned for Ordinary-Adjusted]$_{t-12}$) / [Earned for Ordinary-Adjusted]$_{t-12}$; Economic Group }
		POS_PRETAX	Pretax profit margin (industry rating)	Rank { [Pretax Profit Margin] ; Economic Group }
		POS_OP	Operating profit margin	Rank { [Operating Profit Margin] ; Economic Group }
		POS_NET	Net profit margin	Rank { [Net Profit Margin] ; Economic Group }
		POS_ROE	ROE (industry rating)	Rank { [Return on Equity] ; Economic Group }
Market and Macro		IRATE	Interest Rate	[3-month NCD rate]

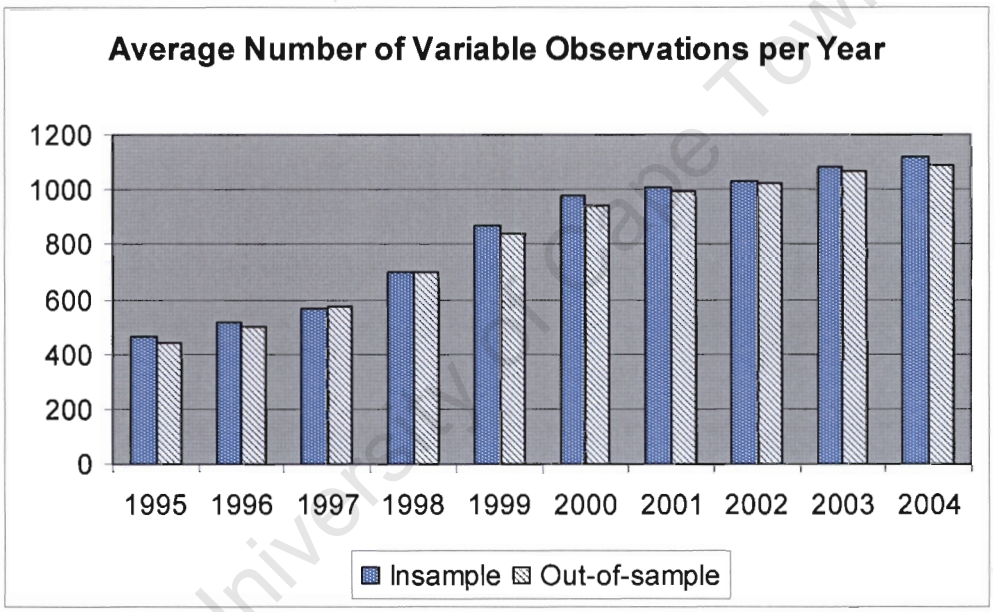
It is evident that many of the variables to be investigated are similar. This is because they were sourced and found to be significant in a number of different papers. When results are obtained careful attention is paid to similar variables which may all be significant as a result of simply capturing the same effect. For the sake of completeness, all variables are included in the tests.

3.7 Number of Observations

Appendix A.13. shows the number of observations per variable per sample year in both the insample and out-of-sample groups of shares. It is evident that there is a lower availability of data in the earlier sample years. The average number of observations per year in each of these samples is summarized in Figure 3.5. below.

Figure 3.5. Average Number of Variable Observations

The graph below shows the average number of observations per variable per year in the sample over the 10 year period from January 1995 until December 2004. The graph shows the average number of observations in both the insample and out-of-sample groups of shares.



A striking observation from the above graph is the extreme similarity in terms of average number of observations between the two samples. Appendix A.13. shows that this similarity is not restricted to the average, but extends to individual variables in every year. This further substantiates the sample formation procedure outlined in Section 3.3 as not only are the samples composed of similar types of companies, but data availability within each sample is also almost identical.

In addition, Appendix A.13. shows that the lack of variable observations in earlier years is particularly bad with regards to specific variables. In particular, no data is available for management and institutional ownership until 2002. Furthermore, those

variables that rely on longer periods of data for their derivation such as 5-year earnings growth and 3 year earnings forecast revision have less data available.

Variables such as change in selling and administrative expenses have very few observations over the whole period and there therefore might be a justification for dropping this variable.

3.8 Summary of methodology

A general outline of the data employed in this thesis has been provided earlier in the chapter. The next step is to describe the methodology to be used in order to ultimately filter out extreme performers. Since there are many detailed steps involved in this procedure, Chapters 4 to 8 which follow present a more complete description of the methodologies relevant to each chapter respectively. The purpose of this section is to provide an overview of the following five chapters in order that the reader has a general idea of the direction in which the thesis is traveling.

Chapter 4 provides a variety of descriptive statistics in order to better understand the nature of the data employed, both before and after adjustments for outliers through winsorisation. In addition to providing the traditional descriptive statistics such as means, medians, standard deviations, skewness and kurtosis, the chapter also illustrates all variables graphically so that a better understanding of the data can be obtained. A substantial portion of the chapter is also dedicated to describing the distributions of the variables in all applicable samples so that appropriate tests can be designed in later chapters.

Chapter 5 shifts the focus away from describing the data, towards describing the nature of extreme performers. In order to distinguish between the properties of extreme performers and non-extreme performers a statistical test is needed to test for differences in the median values of each variable between each of these groups of shares. After careful consideration of numerous statistical techniques and their implicit assumptions, the chapter identifies the chi-squared test as most appropriate for this procedure. The chapter considers not only the contrasting qualities of extreme

and non-extreme performers at the start of their extreme performance, but also concentrates on changes in each variable from up to a year before this commencement of extreme performance.

Economic rationale for the presence or lack of a significant relationship between each variables is approached. The chapter culminates in isolating those significant variables which are perfectly correlated, in order to construct a final list of unique, significant variables for more in-depth consideration in later chapters.

Chapter 6 and 7 conduct the central tests of this thesis. They ultimately aim to isolate an optimal filter combination for identifying extreme winners and extreme losers respectively. The majority of the methodology employed in these two chapters is the same.

The chapters use a unique stepwise median comparison procedure to identify filters. Under this technique, all observations above or below a specific value (the filter level) for a particular variable are filtered for inclusion. A Wilcoxon signed ranks test is then used to compare the median of this filtered portfolio to a particular comparison level, and a z-statistic under the test is generated. The stepwise median comparison test iterates through every filter level for every variable and generates a z-statistic for each. The filter with the greatest z-statistic is the one which produces the most significant results and is therefore included as the first entering filter. The process repeats itself by iterating through every filter level of every other variable in combination with this initial filter. The filter with the highest z-statistic is included as the second entering variable, and so on.

A number of issues are raised regarding this procedure. Firstly, it is computationally inefficient to loop through every possible value of every single variable and filter out shares at each point. Therefore two alternative techniques are considered: either (1) each variable is divided into deciles with filters performed at each of the ten barriers between each decile; or (2) ten filter levels for each variable are derived by starting at the median value of the extreme performer portfolio and taking five steps in either direction, where a step is two-fifths of the difference between the medians of the extreme performer and non-extreme performer portfolios. The second technique,

termed the relative median technique, proves to be the most empirically effective and so is applied for the remainder of Chapters 6 and 7.

Secondly, because there are missing values for some variables, particularly earlier in the sample (as shown in Section 3.7), the filters chosen often severely restrict the number of observations included in earlier years of the sample. Since there is therefore a bias away from those companies without data in the earlier years, two alternatives are again considered. Either (1) only those variables for which there are a significant number of observations in the earlier years of the sample are employed in the stepwise procedure; or (2) the sample period is restricted to the five years from January 2000 until December 2004 where there are a substantial number of observations for all variables. Due to the fact that only ten variables meet the requirements in the first alternative, the results of this option are far worse. Therefore the sample period is restricted for the rest of Chapters 6 and 7.

Thirdly, there are an infinite number of comparison levels against which each filtered portfolio can be compared by the Wilcoxon signed ranks test. Therefore it is necessary to decide which particular comparison levels should be employed. This problem is turned around and used to solve one of the major shortcomings of the stepwise median comparison test. Since this is a stepwise procedure, there is no guarantee that the resulting filter combination will be best possible combination: it may in fact only be a local maximum, instead of a global maximum (Norton and Smith, 1979).

One way to solve this is to consider every permutation of combinations. Instead, since different comparison levels result in different combinations, each a local maximum, the stepwise median comparison test is performed numerous times with a variety of different comparison levels. Furthermore, a greater variety of combinations is created by not only using a fixed or static comparison level, but also allowing this comparison level to become more stringent as the number of filters included increases. By producing a number of unique combinations, it is more likely that a combination that is maximal, or close to it, will be produced. The last stage is therefore to evaluate each of these in order to identify the ultimate filter combination.

Two measures are integral to this evaluation – the Sharpe ratio and a custom measure, the JK statistic. The final choice begins with the best filter combination in terms of these statistics. The effect of either adding or removing particular variables, based on either economic rationale, their effect of sample size or the effectiveness and frequency with which variables appear in other filter combinations, is considered next. Emphasis is also placed on choosing variables from as many different categories as possible in order to form a holistic view of the nature of extreme performers.

Once these two final filter combinations have been identified (one for winners and one for losers), Chapter 8 tests them on the independent out-of-sample shares. For each of these combinations their absolute performance is considered. However, since the exceptional performance may simply be compensation for a higher level of risk, risk-adjusted returns are also considered. The two-factor APT model, with the Resources and Financial-industrial indexes as the factors, is employed in the risk-adjustment procedure. Once again emphasis is placed on verifying that the assumptions of this regression have been met, with adjustments made where necessary.

The composition of each resulting portfolio, in terms of the index from which each share is sourced, is considered. Finally, the size, earnings yield and momentum characteristics of each portfolio is investigated in order to deduce whether any style-based sources of risk, not included by the two-factor APT, are likely to be present.

3.9 Summary and conclusions

This chapter provides a clear overview of the data employed in this study. Section 3.2 gives a general description of the dataset employed over the period from January 1995 until December 2004. It indicates the size requirement of R100 million in order for a company to be included in the study. In addition, the section explains why certain companies, such as PLS companies have been excluded from the dataset.

Section 3.3 outlines some statistical biases which have the potential to influence the results of this thesis. It provides an overview of the problems associated with

infrequent trading, survivorship and lookahead bias. Infrequent trading bias has been minimized by placing a size restriction on the included companies as per Davis (1994) and working with monthly rather than daily or weekly data. Survivorship bias is not controlled for but is unlikely to be a major problem since the thesis concentrates on large, non-thinly traded companies (van Rensburg, 2001). Finally, lookahead bias is indirectly eliminated by using data which has been controlled for this.

The next step, conducted in Section 3.4, is to divide the selected data into a test sample on which the methodologies of Chapters 4 to 7 will be performed, and an independent sample on which the verification of Chapter 8 will be executed. After evaluating the sample formation technique of Tunstall at al (2004), the data is divided by splitting each economic group alphabetically. This ensures that each sample has a similar composition of shares.

Extreme winners are defined as those shares which at least double in price in a twelve month period, while extreme losers are those that at least halve. Using this definition, Section 3.5 lists all extreme performers and their magnitude included in the sample. These shares are listed by date, name and magnitude of performance in order to provide a full understanding of the nature, variety and temporal characteristics of extreme performers.

Section 3.6 approaches the task of choosing variables or firm-specific attributes to be employed in this study. Five categories of variables are formed: information variables, valuation measures, technical signals, fundamental variables and industry position variables. The fundamental variables are further broken down into measures of profitability, performance, leverage, liquidity and efficiency. Important variables, as identified in the literature review in Chapter 2, are then categorized into their relevant groupings. A description of how each of these signals is derived is also provided.

In order to gain a better understanding of the variables selected, and the appropriateness of the sample formation procedure, the number of observations of for each attribute in each year of the sample is discussed in Section 3.7. It is shown that both the test and independent samples are very similar, providing further justification for the formation procedure.

After the completion of the data formation procedure, Section 3.8 provides a summary of the methodology to follow in the remainder of this thesis.

-4-

Descriptive Statistics

4.1 Introduction

The previous chapter outlined issues relating to the data required and its collection. This chapter continues by using a variety of descriptive statistics in order to understand the nature of the data employed. The chapter continues as follows:

Section 4.2 provides a statistical analysis of the variables used. This analysis concentrates on the traditional descriptive statistics such as means, medians, standard deviations, kurtosis and skewness. These general descriptive statistics are presented for the in-sample, out-of-sample and total datasets. The same statistics are also computed after the adjustment for outliers mentioned in Chapter 3. Section 4.3 continues with a more detailed graphical analysis of the distributions of variables in order to further compare not only the in-sample and out-of-sample data, but also to visualize the impact of dropping and winsorizing outliers.

The chapter then moves on to consider the distributions of the variables. In particular, Section 4.4 tests whether the variables are normally distributed in order to determine whether parametric tests can be applied in later chapters. Section 4.5 then moves on to consider whether the distributions of variables are similar between extreme performers and non-extreme performers.

Section 4.6 then considers the equality of variances between extreme performer and non-extreme performer observations and draws conclusions from the findings. Finally, Section 4.7 considers the correlations between variables and tests which variables are perfectly linearly correlated.

4.2 Statistical Analysis of Variables

Appendix B.1. provides a summary of the mean, median, kurtosis, skewness and standard deviation of each variable in the in-sample, out-of-sample and total subsets both before and after adjustment for outliers.

Comparing the means and medians of the variables gives an indication of the distribution of the data. Almost three quarters of the variables have larger means than medians. This indicates that the means lie to the right of the medians in the majority of the data, causing it to be skewed to the right. This is consistent with the skewness of the variables which at an average of almost ninety percent indicates substantial skewness to the right both before and after adjustment. The medians, however, remain largely unchanged after the adjustment.

Some of the statistics are significantly affected by the winsorisation process. Firstly, the means of both the in-sample and out-sample decrease by more than twenty percent when extreme outliers are dropped and remaining outliers are winsorised. This suggests that the majority of the outliers are greater than the mean, pulling this measure up substantially. Intuitively this makes sense as a number of the variables included are financial ratios with no upper limits but with distinct lower bounds. Secondly, the exclusion of outliers helps to reduce the standard deviations of the variables by an average of over forty percent. This large reduction in variability indicates the extremity of the outliers originally included and provides further justification for their removal.

Skewness is also reduced by an average of over fifty percent providing a further indication of the presence of extreme outliers on the right hand side of the variable distributions. It follows that kurtosis, which is based on the size of a distribution's tail, is also considerably reduced as the tail is shortened by removing outliers, causing the majority of the variables to be less leptokurtic. All of these factors indicate that the outlier-adjustment process achieves one of its purposes in creating distributions more similar to the normal distribution.

Another interesting feature which can be ascertained from the descriptive statistics is the similarity between the in-sample and out-of-sample stock groups. The difference between the means is relatively small, averaging only thirteen percent of the out-of-sample mean. The medians, which are less affected by extreme values, display a negligible difference between samples. The difference in standard deviation is relatively large – before winsorisation the outsample has an average standard deviation of almost double that of the insample. This difference is reduced to less than ten percent through the adjustment process. The subsamples also become substantially more similar in terms of both kurtosis and skewness through the adjustment process. This indicates a further advantage of the procedure employed to remove outliers.

All of the descriptive statistics therefore indicate that the subsamples are relatively similar. This is a useful finding as it implies that if significant extreme performance signals are found in the in-sample group which do not predict extreme performance in the out-of-sample group, this lack of predictive power cannot be attributed to differences in the distributions of the two subsamples.

4.3 Graphical Analysis of Variables

In order to provide a more visually-appealing description of the dataset, box-and-whisker plots have been drawn of the total dataset as well as of the insample and out-of-sample groups both before and after winsorisation. These plots can be found in Appendix B.2.

The line inside the box indicates the median of the variable. The top and bottom sides of the box indicate the twenty-fifth and seventy-fifth percentiles respectively. The top and bottom ends of the whiskers indicate the points one and a half times the interquartile range[3] from the ends of the box. Any outliers beyond these points are indicated by dots.

[3] The interquartile range is the distance between the 25th and the 75th percentiles

These diagrams help to reinforce two findings from the preceding section. Firstly and most noticeably, there is a large reduction in the number of outliers after the adjustment procedure is implemented. In addition, the diagrams show the extremity of these outliers, some of which appear large enough to significantly influence the distribution of the data themselves. This therefore provides further substantiation for the adjustment process used. Secondly, it is evident that the insample and out-of-sample groups are similar in their spread, particularly after the adjustment process.

4.4 Normality of Data

By definition, parametric tests require that the data are normally distributed (van den Honert, 1999). In order to design appropriate statistical tests to identify extreme performance signals, it is therefore necessary to test whether this assumption holds in the data employed by this thesis.

A number of methods are available to test for normality in the data. This section approaches this task by first employing a graphical technique, the normal probability plot. It then continues by applying a statistical test, the Shapiro-Francia test for normality.

4.4.1 Graphical Test

Some of the most effective methods for evaluating the normality of data are graphical methods (Baron, 2002). One such method is the use of standardized normal probability plots, also known as P-P plots. This plot is simply a scatter diagram with the cumulative proportions of the variable on the x-axis and the cumulative proportions of the normal distribution on the y-axis. If a variable is normally distributed, these proportions should be equal and so the datapoints should lie on a straight, 45 degree line from the origin.

In addition to being able to deduce the degree of normality from inspecting a P-P plot, one is also able to infer how the data is inconsistent with the normal distribution by

the shape and degree to which the datapoints conform to the 45 degree reference line. The actual normal probability plots are included in Appendix B.3.

According to Prophet Statguide (1997), the data may be skewed to the right if both ends of the normality plot bend above a hypothetical straight line passing through the main body of the X-Y values. This is the case for a number of variables (such as market value and the trading volume measures). This finding is consistent with the skewness identified by the descriptive statistics.

By examining histograms of the variables, those variables that are highly skewed to the right are identified. Natural log transformations are then performed on these variables. By examining the normal probability plots, the effect of these transformations is clearly evident. All of the transformed variables are much more consistent with the reference line, indicating the substantial increase in the normality of their distributions. The variables MV and LN_MV, the trading volume variables and their logarithms as well as EPS and LN_EPS are prime examples of this.

A number of variables also display heavy distributions at the lower and upper ends of the distribution (for example change in return on equity and the earnings growth variables). This indicates that a greater proportion of the variables' datapoints lie at the top and the bottom of the distribution than suggested by the normal distribution.

As can be seen from Appendix B.3. although a number of variables do roughly conform to the normal distribution, there are still a number that do not. To form a clearer picture as to which do and which do not, statistical tests for normality are also be performed. Combining the results from these tests with the findings from the normal probability plots allows more conclusive results concerning the normality of data to be derived. With this information, appropriate statistical tests can be designed.

4.4.2 Statistical Test

The statistical test used to test for normality is the Shapiro-Francia test. This formal test for normality is conducted on all variables. This test computes a W-statistic which may be thought of as the correlation between the given data and the corresponding normal scores. If the value is unity, the variable is perfectly normally distributed. If the W-statistic is significantly less than one, the data is non-normal. The hypothesis in this test is therefore as follows:

H_0: The data is normally distributed

H_1: The data is not normally distributed

The p-values for these tests, together with the results for the graphical test, are included in Appendix B.4. The shaded p-values indicate that the variables are normal at the five percent significance level.

A variable is regarded as normal if the null hypothesis of normality cannot be rejected at the five percent significance level. It is also regarded as normal if it is considered normal under the graphical technique and normality cannot be rejected at the four percent level in terms of the statistical technique. The results of this process are also indicated in Appendix B.4. One interesting result which is evident from this table is that those variables which underwent natural logarithimic transformations were transformed from non-normal to normal distributions in the majority of cases.

4.5 Distributions of Samples

The previous section shows that in a number of cases the distributions of the variables are not normal. This is an important finding when deciding to apply parametric or non-parametric statistical techniques. A further question about the distributions arises, however: do the winner and non-winner shares have similar shaped distributions, or are the distributions of these two groups completely different? Similarly, are the distributions of the loser and non-loser portfolios similar in shape? These questions are also vital in determining which statistical techniques to apply as ultimately it is

these subsamples that are compared with each other and some tests such as the Wilcoxon Rank Sum test, discussed later, rely on the assumption of similar shaped distributions.

In order to test whether distributions are similar the Smirnov test, also known as the Kolmogorov-Smirnov two-sample test is used. This test is used to decide whether two samples, one from each of two possible populations, are associated with identical distribution functions or not. The null and alternative hypotheses may be stated as:

H_0: $F(x) = G(x)$ for all x from $-\infty$ to $+\infty$

H_1: $F(x) \neq G(x)$ for at least one value of x

The assumptions of this test are as follows (Conover, 1999):

1. The sample are random samples
2. The two samples are mutually independent
3. The measurement scale is at least ordinal
4. The random variables are continuous

This test needs to be adjusted slightly to make it applicable to the problem at hand. The test statistic (T) is calculated as the greatest vertical distance between the two distribution functions:

$$T = \sup_x |S_e(x) - S_c(x)| \qquad (4.1)$$

Where $S_e(x)$ is the empirical distribution function based on the random sample $X_1, X_2, \ldots, X_n$ drawn from the extreme performance portfolio and

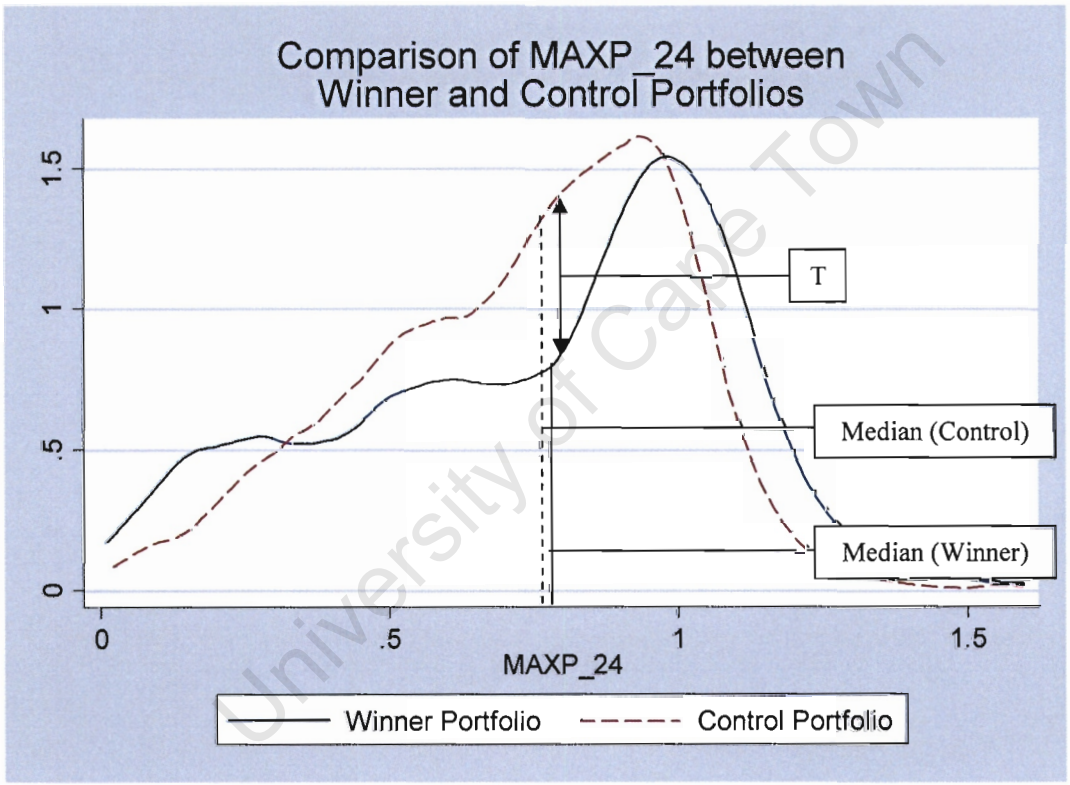
$S_c(x)$ is the empirical distribution function based on the random sample $Y_1, Y_2, \ldots, Y_m$ drawn from the control portfolio.

For example, the distributions of the winner and non-winner portfolios for MAXP_24 (the stock price as a percentage of the previous 24 month high) are shown in Figure 4.1. below. The graph shows the actual empirical distributions. The T statistic would therefore be indicated by the maximum distance between these two functions, indicated by the arrow. However, part of this maximum distance results because the

medians and therefore the locations of the two samples are different. This implies that if the distributions are identical in shape and only different in location, the Smirnov test will conclude that the two distributions are different.

Figure 4.1. Comparison of Empirical Distribution Functions of Winner and Control Portfolios for MAXP_24

The graph below plots the empirical distribution functions for both the winner and control portfolios for the variable MAXP_24 (the stock price as a percentage of the previous 24-month high). The dotted vertical line represents the median of the control portfolio (0.7692) and the solid vertical line represents the median of the winner portfolio (0.7813). The arrow represents the maximum distance between these two distribution functions, referred to as the test statistic (T) in the Smirnov test for identical distributions.



It is therefore necessary to adjust the distributions such that the medians are identical. By doing this, two identically shaped distributions would lie exactly on top of each other and the Smirnov test would only test whether the shapes are identical. In order to do this, the control sample (S_c) is adjusted as follows:

$$S'_c = S_c + d \quad \text{where} \quad d = Median(Winner) - Median(Control) \qquad (4.2)$$

After making these adjustments, the Smirnov test yields the results shown in Appendix B.5. It is evident from this table that the distributions of the extreme

performer and non-extreme performer samples are different for most variables. In fact, of the 92 variables considered in this study, 80 (87 percent) display different distributions between winner and non-winner shares and 75 (82 percent display different distributions between loser and non-loser shares).

This conclusion can be verified graphically by considering the distributions of the various portfolios of each variable shown in Appendix B.6. It is clear from these distributions that in many cases the various subsamples have significantly different shapes.

One interesting observation that is particularly evident for the comparison of the winner and non-winner shares is the effectiveness of the log transformation applied earlier. Despite the fact that all of the volume measures display different distributions between the two portfolios, in all cases their log-transformed counterparts display distributions identical in shape. This clearly illustrates that the log transformation indeed helped to convert the observations into a normal distribution in all cases.

A conclusion which can be drawn from the analysis in this section is that it would be unjustified to use any statistical tests which rely on the assumption of identically-shaped distribution. One such test is the Wilcoxon Rank Sum Test, discussed later.

4.6 Equality of Variances

The previous section dealt with the problem of whether the variables are normally distributed in order to determine whether parametric statistical techniques can be applied. For certain parametric tests, such as the Student t-test, different procedures are applicable if the populations being compared have equal variances or not. It is therefore important to test for equality of variances so that appropriate statistical tests can be applied. In addition, the tests of equality of variances of the variables will provide further descriptive statistics to better explain not only the nature of each variable better, but also the nature of the extreme performance and control portfolios.

The F-test for equality of variances is used. This test considers the ratio of two population variances (σ_1^2 / σ_2^2). According to Keller and Warrack (2000), the sample variance is an unbiased estimator of population variance. Therefore the test statistic for this test is simply:

$$F = s_1^2 / s_2^2 \qquad (4.3)$$

where s^2 is the sample variance

The test statistic is F-distributed with when the underlying populations are normal. The statistic has $v_1 = n_1 - 1$ and $v_2 = n_2 - 1$ degrees of freedom, where n_a is the number of observations in sample a.

If the variances are equal, their ratio should equal to unity. The null and alternative hypotheses are therefore as follows:

H_0: $s_1^2 / s_2^2 = 1$ (the variances are equal)

H_1: $s_1^2 / s_2^2 \neq 1$ (the variances are not equal)

This test is used to compare the variances of both the winner and control portfolios and the loser and control portfolios for each normally distributed variable. Tests are performed to not only test for equality of variances, but also to determine which variance is greater if they are unequal. The results can be found in Appendix B.7. Included in the results are the F-statistics and all associated p-values. The shaded values indicate situations in which the null hypothesis has been rejected and the variances are therefore not equal.

Figure 4.2. Comparison of variance of extreme performers to non-extreme performers

The block on the left of the figure shows that the majority of variables relating to both winner and loser companies have a higher variance than non-winner and non-loser companies respectively. The block on the right then shows the breakdown of these unequal variances: most variables have a greater variance in both winner and loser companies than in non-winner and non-loser companies, pre-empting a difficulty in isolating exact signals for extreme performance.

	σ^2(Winner)	σ^2(Loser)
$\neq \sigma^2$(Control)	85%	70%

	σ^2(Winner)	σ^2(Loser)
$> \sigma^2$(Control)	81%	75%
$< \sigma^2$(Control)	19%	25%

Some interesting observations can be drawn from these results, summarized in the figure above. There appears to be a difference in variances between the extreme

performer and control portfolios, especially between the extreme winners and control shares. This is evidenced by 85 percent of variables displaying unequal variances between winner and control portfolios, and 70 percent displaying unequal variances between loser and control portfolios.

More interestingly, it appears the variables are more stable for control portfolios than for extreme performance portfolios. In particular, of the variables that display unequal variance, 81 percent of winner and 75 percent of loser portfolios' variance exceed that of control portfolios. This may indicate a potential difficulty in identifying extreme performance filters; if extreme performers have volatile variable values, identifying one constant filter level may be difficult. This in turn implies that the search for models of extreme performance should not only consider the magnitude of variables but also the change in variables. This is explicitly taken into account in the next chapter.

4.7 Correlations between variables

As is evident from Table 3.4. a number of variables are derived in similar ways. Furthermore, theory would suggest that there would be a close relationship between certain variables. For example, twelve month momentum should be closely related to relative strength as both are measures of twelve month share performance. It is therefore necessary to consider the correlations between the variables employed in this paper. In order to do this, the simple average of the monthly pairwise correlations between all variables has been calculated as in Frankish (2004). The results of this simple averaging process can be found in Appendix B.8.

However, this simple averaging procedure does present some conceptual problems and may introduce biases into the results. There are two main sources to these problems. The first is that the number of observations for each variable are not constant, and in general there are far fewer observations in the earlier months of the sample. Secondly, the pairwise correlations are calculated using only those observations that are present for both variables in question. The implications of both these issues are discussed below.

Firstly, the inconsistency in the number of observations throughout the months of the sample period is considered. For example, if correlations between Variable 1 and Variable 2 are based on 30 observations in January 1995 and 100 observations in December 2004, it is intuitive that the December 2004 correlation will be more statistically significant than the January 2005 correlation as it is calculated using a greater sample size (Keller and Warrack, 2000). It therefore may introduce biases if both of these correlations are given the same weight when calculating the average correlation between the variables. In order to resolve this issue, monthly correlations should be weighted according to the number of observations that are included in that month's calculation for those two variables, as a percentage of the number of observations that are included in all months' calculations for those two variables:

$$\text{Weight} = \frac{\text{Number of Observations in Month}}{\text{Total Number of Observations in Sample}} \qquad (4.4)$$

This leads to the second issue. It is important to note that correlations are calculated based on only those observations that are present in both variables under consideration. Therefore the number of observations used in calculating a month's correlation may be substantially lower than the number of total observations for either variable for that month.

After taking these considerations into account, a weighted average correlation matrix is calculated and can be found in Appendix B.9. Appendix ***; Eviews: Model1, correlation_weighted. The weights for each variable for each month are calculated as follows:

$$\text{Weight} = \frac{N_{(i\,j)a}}{\sum_{a=1}^{n} N_{(i\,j)a}} \qquad (4.5)$$

where $N_{(i\,j)a}$ is the number of dual observations for variable i and variable j in month a

Similar to Frankish (2004) and Janari (2005), those variables which display significant pairwise correlations are identified. In order to determine whether a

pairwise correlation is significant or not, a t-test is employed. According to van Honert (1999) in order to test the null hypothesis that there is no correlation between two variables ($\rho = 0$), the following test statistics is used:

$$t_{obs} = r_{xy}\sqrt{\frac{n-2}{1-r_{xy}^2}} \qquad (4.6)$$

However, this thesis aims to identify those variables which do not add any explanatory power at all. In other words, it is necessary to test whether each pairwise combination of variables is significantly perfectly positively or negatively correlated. The null and alternative hypotheses and the test statistic are as follows:

H_0: $|\rho| = 1 \quad \therefore |\rho| - 1 = 0$

H_1: $|\rho| \neq 1 \quad \therefore |\rho| - 1 \neq 0$

$$t_{obs} = (|r_{xy}| - 1)\sqrt{\frac{n-2}{1-(|r_{xy}| - 1)^2}} \qquad (4.7)$$

Which has a t-distribution with (n – 2) degrees of freedom.

This t-test is performed on every pairwise correlation at the 5% significance level. The correlations for which the null hypothesis cannot be rejected are shown in the table below. In other words, these are the correlations for which there is no evidence to suggest that the relevant variables are not perfectly correlated.

Table 4.1. Perfectly Correlated Variables

The table shows those variables for which the null hypothesis of perfect correlation cannot be rejected (the correlation coefficient is equal to unity) at the 5% significance level.

	Variable *i*	=	Variable *j*
1	LN_VOL_6		LN_VOL_3
2	LN_VOL_12		LN_VOL_6
3	VOL_18		VOL_12
4	LN_VOL_18		LN_VOL_6
5	LN_VOL_18		LN_VOL_12
6	VOL_24		VOL_12
7	VOL_24		VOL_18
8	LN_VOL_24		LN_VOL_12
9	LN_VOL_24		LN_VOL_18
10	CH_QUICK		CH_CURRENT
11	GFORECAST_12		EPS
12	RSTRENGTH_ALSI		MOM_12
13	RSTRENGTH_SUB		RSTRENGTH_ALSI
14	CH_RSTRENGTH_SUB		CH_RSTRENGTH_ALSI
15	WRSTRENGTH_ALSI		RSTRENGTH_ALSI
16	WRSTRENGTH_SUB		RSTRENGTH_SUB
17	WRSTRENGTH_SUB		WRSTRENGTH_ALSI
18	POS_NET		POS_PRETAX

The variables which are found to be perfectly correlated are of no surprise. It seems logical that the average volumes traded for various time periods should be highly related as the longer periods contain the shorter periods' averages in them. It also seems logical that the change in the current and quick ratios should be closely related as both of these measure changes in the liquidity of a company.

Interestingly, one year forecasted growth is perfectly correlated with earnings per share. This implies that analysts base a large emphasis on changes in current earnings in predicting future earnings. It therefore appears that analysts expect past growth rates to continue into the future.

A less surprising result is that one year momentum is perfectly correlated with the relative strength of a company when compared to the rest of the market. Since relative strength is simply the position of the company in terms of its one year momentum, it follows that a change in momentum should lead to a similar change in relative strength.

The results also show that the vast number of relative strength measures considered in this study are not justified as many of them are very closely related with each other. This may provide a justification for focuses on one of these measures.

Finally, the company position in terms of pretax and net profit margins are found to vary identically with each other. This too is not surprising since net margin is a function of pretax profit margin and therefore a change in pretax profit margin will lead to a change in net margin, effecting the position of the company in terms of these measures equally.

4.8 Summary and Conclusion

The chapter provides a detailed description the data employed. Section 4.2 analyses the descriptive statistics of the all firm-specific attributes. Section 4.3 presents similar information graphically, by graphing box-and-whisker plots for each variable. It is evident from these two sections that the nature of the variables are similar between the in- and out-of-sample groups, particularly after winsorisation. The effectiveness in removing outliers is also apparent.

Section 4.4 considers whether the data are normally distributed with both a graphical and a statistical technique. It finds that the majority of variables are in fact not normally distributed, implying that parametric statistical techniques are not appropriate.

Another assumption implicit is some statistical techniques is that two samples have at least the same shape, even if this shape is not normal. Section 4.5 therefore compares the distributional shapes between extreme performer and non-extreme performer portfolios by employing a derivation of the Smirnov test. It finds the distributions are in fact different in most cases. This implies that techniques relying on the assumption of identical distributions are also not appropriate.

Section 4.6 compares the variances of the extreme and non-extreme performer samples. It finds that extreme performers have significantly greater variance in

attributes. This may suggest that isolating one particular filter level for a variable could be a difficult task.

Since a number of variables are derived using similar components in different combinations, it is expected that there will be high correlations between some variables. Section 4.7 shows which variables are in fact perfectly correlated. These variables are therefore earmarked for removal in later chapters.

-5-

Identification of Extreme Performance Signals

5.1 Introduction

Once extreme performers have been identified it is necessary to find what factors, if any, distinguish these shares from non-extreme performers. This thesis breaks this problem down into two components. It looks firstly at the signals which distinguish extreme performers from other securities. Secondly, it looks at the changes in extreme performers before their exceptional performance. This second point may help to explain the larger than average signal variance in extreme performers as found in the Section 4.6. As mentioned in Chapter 3, by including multiple instances of extreme performance, the identification of disposal signals is not necessary as all extreme performers will simply have a holding period of twelve months from the point at which the extreme performance signals are no longer significant.

Section 5.2 begins by developing a methodology for identifying extreme performance signals. In particular it considers three alternatives: a simple Student t-test, the Wilcoxon rank sum test and the chi-squared median test. Section 5.3 then moves on to apply this methodology in order to find those variables which distinguish extreme performers from non-extreme performers. Thereafter, Section 5.4 considers so-called "evolution" signals – variables which evolve or change in winner and loser companies as the start of extreme performance approaches.

Throughout these sections a number of variables are found to be useful signals of extreme performance. However, a number of other variables are never found to be significant despite their importance in past literature. Section 5.5 therefore considers this group of variables and tries to explain their insignificance.

A number of variables which are found to be significant are perfectly correlated with other significant variables in terms of Section 4.7. In response to this, Section 5.6

provides a methodology for removing perfectly correlated variables and presents the results. Finally, the chapter concludes in Section 5.7 with a summary and interpretation of the remaining winner and loser signals.

5.2 Methodology

In the first set of tests it is necessary to determine whether any difference exists in each variable between extreme performers and other shares. In the second set of tests it is necessary to determine whether the value of a particular variable is different for the same extreme performing share over time. In both these sets of tests the mean or median of a variable is compared among two populations. A number of tests are available to perform such a procedure. Three of these tests are considered and evaluated for the purpose of this study:

(i) Student two-sample t-test

(ii) Wilcoxon Rank Sum test

(iii) The chi-squared median test

Each of these tests is better applicable under different scenarios. These scenarios, together with the test statistics, hypotheses and assumptions are discussed below. The advantages and disadvantages of each method are considered before deciding on a method with which to proceed.

5.2.1 Student two-sample t-test

The Student t-test is used to determine the difference between two population means. This test requires that the underlying data be normally distributed. Two variations of this test are pertinent to this study: the two-sample t-test when variances are equal and when variances are unequal. The null and alternative hypotheses for both these tests are:

H_0: $\mu_1 - \mu_2 = 0$

H_1: $\mu_1 - \mu_2 < 0$ *or* $\mu_1 - \mu_2 \neq 0$ *or* $\mu_1 - \mu_2 > 0$

When variances are assumed to be equal between these two populations, the test statistic is as follows (Keller and Warrack, 2000):

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{s_p^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} \qquad (5.1)$$

with d.f. $= n_1 + n_2 - 2$

Where $s_p^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}$ (5.2)

When variances are assumed to be unequal between two populations, the test statistic for the Student t-test is as follows (Keller and Warrack, 2000):

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)}} \qquad (5.3)$$

with $d.f. = \frac{(s_1^2/n_1 + s_2^2/n_2)^2}{\left(\frac{(s_1^2/n_1)^2}{n_1 - 1} + \frac{(s_2^2/n_2)^2}{n_2 - 1}\right)}$ (5.4)

Since this is a parametric test, it is only applicable when the data are normally distributed. Even though findings on the normality of variables is available from Section 4.4, the strength of these findings is questionable, especially in light of the inconsistencies between the results of the two tests used. Furthermore, since only 40 percent of the variables were found to be normally distributed an alternative nonparametric test will have to be used for the remaining 60 percent of the variables. Such a test is outlined next.

5.2.2 Wilcoxon Rank Sum Test for independent samples

The Wilcoxon Rank Sum test (also known as the Mann-Whitney test) is used to compare two populations from independent samples where the data are either ranked or quantitative. It is used when the normality requirement necessary for conducting an equal-variances t-test is unsatisfied.

This tests begins by combining both samples and ranking all the data. A sum of ranks for each sample is then calculated. These sums are then compared to each other in order to determine whether the population distributions are identical or not. The sum of the ranks of the first sample is the test statistic, T.

According to Conover (1971), when sample sizes are larger than 10, the sampling distribution of this test statistic is approximately normal with mean and variance as follows:

$$E(T) = \frac{n_1(n_1 + n_2 + 1)}{2} \qquad (5.5)$$

$$\text{and } \sigma_T^2 = \frac{n_1 n_2 (n_1 + n_2 + 1)}{12} \qquad (5.6)$$

The standardized test statistic is therefore as follows:

$$z = \frac{T - E(T)}{\sigma_T} \qquad (5.7)$$

The null and alternative hypotheses are:

H_0: The two population locations are the same

H_1: The location of population 1 is to the right of the location of population 2

A number of assumptions are implicit in the Wilcoxon Rank Sum test (Conover, 1971):

1. Both samples are random samples from their populations
2. Samples are independent and mutually independent
3. Both samples consist of continuous random variables
4. The measurement scale is at least ordinal
5. Any difference in population distribution functions can be attributed to differences in locations of these functions. In other words it is assumed that the shape of these functions are identical and only the positions different.

This test has the advantage that it is robust enough to be used not only in the case when the data are normally distributed but also in the case where they are not

normally distributed. This implies that it is possible to use this test for all variables where the subsamples have similar shaped distributions unlike the t-test.

However, one problematic assumption which this procedure does require is that the samples come from populations with similar-shaped distributions. This requirement is obviously not met as mentioned in Section 4.5. Therefore it is not appropriate to use this test as any difference in the two samples may be attributed to a difference in the shape of the distribution, rather than a difference in location. The test discussed next is not inhibited by this restrictive assumption.

5.2.3 The Median Test

According to Conover (1999), unlike the Wilcoxon Rank Sum test, the median test does not require that the populations be identical and it may therefore be applied in situations where the former is not valid. The median test is designed to examine whether several sample are drawn from populations have similar medians. The null and alternative hypotheses are therefore as follows:

H_0: All c populations have the same median

H_1: At least two of the populations have different medians

The assumptions of this test are as follows (Conover, 1999):

1. Each sample is a random sample
2. Samples are independent of each other
3. The measurement scale is at least ordinal
4. If all populations have the same median, all populations have the same probability p of an observation exceeding the grand median.

The test statistic is derived by first combining the two samples to be compared and determining the median for this combined sample, called the *grand median*. The number of observations above this grand median, O_{1i}, are computed for each of the two samples (where $i = 1$ *or* 2). Similarly the number of observations less than or equal to this grand median, O_{2i}, are computed for each sample:

Sample	1	2	Totals
> Median	O_{11}	O_{12}	a
≤ Median	O_{21}	O_{22}	b
Totals	n_1	n_2	N

The total number of observations above the median (a) and equal to or below the median (b) are calculated. The sum of these two totals should equal the total number of observations (N). The test statistic is then as follows:

$$T = \frac{N^2}{ab} \sum_{i=1}^{c} \frac{\left(O_{1i} - \frac{n_i a}{N} \right)^2}{n_i} \qquad (5.8)$$

This test statistic approximately follows the chi-squared distribution with one degree of freedom.

In order to produce consistent results this thesis aims to apply the same statistical test to all variables. The non-normality of a number of variables (illustrated in Section 4.4) therefore excludes the t-test which relies on the assumption of normality. Furthermore, the fact that the subsamples are not identically distributed for most variables (see Section 4.5) implies that the Wilcoxon Rank Sum test, which relies on this assumption should also be excluded. The median test is therefore the most robust and applicable in this case and will be used to test all hypotheses of equality between portfolio values.

5.3 Extreme Performers versus Other Companies

Similar to Tunstall et al (2004) the characteristics of extreme performers are compared to the characteristics of non-extreme performers in the period of the buy signal. The buy signal is the beginning of the twelve month period in which a stock price doubles. In order to determine whether signals are significant for extreme performers, the distributions of the two groups are compared with the median test. The results of this process for extreme winners are summarized in Appendix C.1. Results for a similar test for extreme loser signals are summarized in Appendix C.2.

Table 5.1. below shows the number of significant factors in terms of the median test.

Table 5.1. Number of significant variables

The table below shows the number of variables found to have significantly different medians between winners and non-winners, and losers and non-losers by the Chi-squared median test at the 5% significance level. In addition, the table shows the percentage of total variables considered for each group that are found to be significantly different.

	Winners	Losers
Number of Significant Variables	31	41
% Significant Variables	34%	45%

The table above indicates that out of the 92 variables considered, 31 variables (34 percent) are significantly different between winner and non-winner shares and 41 variables (45 percent) are significantly different between loser and non-loser shares. The large proportion of variables accepted may be a function of only considering those variables that were found to be significant in past literature.

Appendices C.1. and C.2. show the T-statistics and p-values for the median tests conducted on each variable. The tables also list the means, medians and differences between these two statistics with regards to the extreme performer and non-extreme performer portfolios. The final column in Appendices C.1. and C.2. indicates which subsample has the higher median for each variable. A "+" indicates that the variable is more likely to be larger in the extreme performer than the non-extreme performer sample. This is the case if there is (1) a significant difference between the medians according to the median test; and (2) the median of the extreme performer sample is greater than that of the non-extreme performer sample.

A "-" indicates that the variable is more likely to be smaller in the extreme performer sample than the non-extreme performer sample. This statistic is present if (1) a significant difference in medians is found by the median test; and (2) the median of the extreme performer sample is less than that of the non-extreme performer sample. If a significant difference is found but there is no difference in the sample medians, as is the case with institutional ownership, it is assumed that this relationship is not strong enough to exploit.

A number of interesting observations are evident from these results. Some of these results are discussed for both winner and loser signals below.

5.3.1 Winner Signals

Table 5.2. below lists all signals which are significant according to the median test at the 95 percent confidence level. The signals are ranked according to the magnitude of their T-statistics in each variable category. In addition, the table indicates the medians of the winner and non-winner groups, as well as the differences between medians.

In the cases where an unadjusted variable and a corresponding logarithmically transformed variable both appear as significant (for example, NOSHARES and LN_NOSHARES or SALEStCASH and LN_SALEStCASH), only the unadjusted variable is shown in the table. This is done because this variable is more economically interpretable than its transformed counterpart. Furthermore, the use of this unadjusted variable will not hinder the statistical tests in later section as only non-parametric statistics which do not require normality are used.

Table 5.2. Significant Winner Signals

The table shows the results from the median test for significant winner signals at the 5% significance level along with numerous other statistics. For the median test, the T-statistic and p-value indicating the difference between winner and non-winner medians is shown for each variable. In addition, the medians and differences between medians in the winner and non-winner portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the values of the relevant variables are larger (+) or smaller (-) in winner shares. The table is sorted by the strength of the findings for each category of variables, judged by the magnitude of the T-statistics.

			Median Test					Summary
			P-Value		Median			
			T	Winner ≠ Control Ha: diff != 0	Winner	Non-winner	Difference	
Valuation Measures		MTB	49.9706	**0.0000**	1.1700	1.4200	-0.2500	-
Technical Indicators		NOSHARES	13.5032	**0.0002**	97558.0000	105641.0000	-8083.0000	-
		SDEV_VOL	5.9715	**0.0145**	0.6407	0.5325	0.1082	+
Fundamental Measures	Profitability	OPINCtTA	61.4261	**0.0000**	0.0798	0.1007	-0.0209	-
		PRETAX_PM	51.6723	**0.0000**	0.0686	0.0860	-0.0174	-
		SALEStCASH	43.5268	**0.0000**	13.7916	9.6087	4.1829	+
		GM	4.7412	**0.0294**	0.2150	0.1853	0.0297	+
	Performance	GFORECAST_12	19.9761	**0.0000**	1.2650	1.6600	-0.3950	-
		ROE	17.5126	**0.0000**	0.1692	0.1908	-0.0216	-
		ROA	11.9858	**0.0005**	0.0659	0.0726	-0.0067	-
		EARNG_60	9.8536	**0.0017**	0.0705	0.0929	-0.0224	-
		REVISION_24	6.0353	**0.0140**	-0.1085	-0.0548	-0.0537	-
		REVISION_12	5.9541	**0.0147**	-0.1107	-0.0792	-0.0315	-
		EARNG_12	5.1011	**0.0239**	0.0181	0.0148	0.0033	+
		DY	3.9805	**0.0460**	0.0229	0.0253	-0.0024	-
	Leverage	CAPGEAR	36.4044	**0.0000**	23.6500	18.4100	5.2400	+
	Liquidity	CH_QUICK	11.2152	**0.0008**	-0.0110	0.0000	-0.0110	-
	Efficiency	CH_DEP	24.1794	**0.0000**	0.1099	0.1787	-0.0688	-
		CH_INVtTA	20.6995	**0.0000**	0.0028	0.0000	0.0028	+
		CH_TA	12.3893	**0.0004**	0.0968	0.1249	-0.0281	-
		ACCtTA	8.2846	**0.0040**	-0.0266	-0.0151	-0.0115	-
		CH_ARISALES	7.3954	**0.0065**	-0.0592	-0.0214	-0.0379	-
		CH_ASSTURN	4.1529	**0.0416**	0.0337	0.0138	0.0199	+
		NTC	3.8763	**0.0490**	69.2124	63.5660	5.6465	+
Industry Position		POS_OP	24.7032	**0.0000**	12.0000	10.0000	2.0000	+
		POS_NET	15.8393	**0.0001**	12.0000	11.0000	1.0000	+
		POS_ROE	13.8410	**0.0002**	11.0000	9.0000	2.0000	+
		POS_PRETAX	5.5071	**0.0189**	11.0000	10.0000	1.0000	+

The results from Table 5.2. above are discussed according to the categorization of each variable:

(i) Information variables

It is evident from the table that no information variables are significant signals of winner shares. This would seem to indicate that the amount of institutional ownership or management ownership in a company is not a significant influencer of extreme performance. This result may be due to a lack of data for these variables, however.

(ii) Valuation measures

Of all the valuation measures only market-to-book (MTB) value is a significant signal. The table indicates that winner shares are more likely to have a lower MTB ratio than non-winner shares. In fact, in the sample studied, winner shares have a

median MTB of 1.17 while non-winner shares have a median MTB of 1.42. This indicates that the market is more likely to undervalue winner shares than other shares. This may be a indication that winner shares tend to be value shares.

(iii) Technical Indicators

A few technical indicators are significant signals of extreme performance. The most significant of these is the number of shares. Winner shares appear to have substantially fewer shares in issue than non-winner shares. This is consistent with the findings of both O'Neil (2002) and Reinganum (1988), who attribute the result to the fact that if a company becomes popular and the number of shares available is limited, investors will bid higher for these limited number of shares and thereby push up the price.

Furthermore, the results indicate that winner shares tend to have a higher daily volatility over the preceding 3 months compared to 12 months before (SDEV_VOL) than non-winner shares. This finding is consistent with Glickman et al (2001) who attribute the result to disagreement in the market about the future prospects of the firm. This disagreement might explain why the share price has not yet increased by its full potential.

Interestingly, a number of technical indicators are not found to be significant, despite their importance in the literature. In particular, most of the measures of volume traded are not significantly different between winners and non-winners. These may become important in recognizing the lead-up to extreme performance rather than distinguishing winners from non-winners at the start of extreme performance. This evolution process is discussed later.

Perhaps the most surprising result within the technical indicators, especially in a South African context, is that no momentum variables are found to be significant signals. This is in spite of van Rensburg's (2001) finding that 12-month momentum is the most significant style factor on the JSE Securities Exchange. Another interesting result is that the share price compared to past highs (MAXP) is also not found to be significant despite its importance in both O'Neil (2002) and Reinganum (1988).

(iv) Fundamental measures

A number of *fundamental measures* are found to be significant. Firstly, within the profitability measures, the most significant variable is the operating income to total assets (OPINCtTA) which is found to be lower in winner than non-winner shares. In fact, the median operating income as a percentage of total assets is less than 8 percent for winners and greater than 10 percent for non-winners. This is a surprising result as intuition would suggest that winner shares utilize their assets more productively than non-winner shares, thereby warranting their extreme performance. However, this is consistent with the findings of Dong et al (2003) who find that winners tend to lose revenue and sales prior to their extreme performance.

Another suprising result is that winners seem to have lower pretax profit margins (6.86%) than non-winners (8.6%). Intuition would suggest the companies which manage to bring in more profits per unit sold would do better. On the other hand, winner shares seem to have higher sales to cash ratios than non-winners. This may indicate that winner companies attain higher levels in sales or do not tie up too much money in cash. In addition, winners have higher gross margin ratios and therefore make higher margins per unit of sales than non-winners.

Secondly, a number of *performance measures* are also significant. Interestingly, the forecast 12 month forward growth rate (GFORECAST_12) is higher for non-winners than for winners. This may be an indication once again of the disagreement in the market about the prospects of the firm (as indicated by the higher volatility in volume). The fact that analysts have not predicted the winners' growth may also explain why the shares have not yet appreciated in value and yield their extreme performance.

The fact that, in general, analysts revise their forecasts of earnings down more for winners and non-winners both on a one year (REVISION_12) and a two year (REVISION_24) horizon reiterates this point. This seems to indicate that analysts are not successful in spotting extreme winners. This might imply that the ordinary fundamental signals which are used by analysts may not be enough to identify extreme performers.

Return on equity is lower in winners than non-winners. This is contrary to the findings of O'Neil (2002). On the other hand, it is consistent with the findings of van Rensburg (2001) who shows that the return associated with investing based on return on equity is low in comparison to other style factors.

Interestingly, winner shares have lower 60 month earnings growth rates when compared with non-winner shares. This indicates that past long-term performance is worse in winners than non-winners. On the other hand, short-term performance seems to be improving, indicated by the comparatively higher 12 month earnings growth rate in winners. This may imply that winners have recently managed to turn their performance around and the rewards are waiting around the corner.

The dividend yield is lower in winners than non-winners. This may indicate that winner firms reinvest their earnings in profitable investments and hence generate large-scale returns whereas non-winners simply distribute more of their profits. This is also consistent with the arguments of Litzenberger and Ramaswany (1979) who show that there is a clientele effect among firms with high tax bracket investors focusing on low dividend yield stocks. Since these are generally the wealthier investors, they have the necessary capital to collectively induce extreme performance.

Thirdly, the only *leverage ratio* which is found to be significant is capital gearing. Winners seem to use more debt in their capital structure, indicated by a higher capital gearing ratio. This may help to leverage good performance to the point where it becomes extreme.

Fourthly, the change in the quick ratio is a *liquidity ratio* which is significantly different between winners and non-winners. Winners experience a decrease in their quick ratios whereas non-winners are stable in terms of this liquidity measure. This indicates that the liquidity position of winners deteriorates before extreme performance. It could also indicate that winner companies improve the efficiency of their working capital management, and in so doing decrease their holdings of highly liquid current assets. This is in contrast to the net trade cycle, however, which is larger in winner shares and therefore indicates less efficient working capital management.

Finally, a number of *efficiency ratios* are found to be significant. Winners appear to have a lower percentage change in depreciation than non-winners. This is a surprising result as being a pure accounting measure, depreciation should not send a powerful enough signal to indicate extreme performance. There is therefore the possibility that this is a sample-specific finding. Alternatively, it may indicate that winners spend less on asset acquisitions before their extreme performance and rather utilize their current asset base. This also seems like a counter-intuitive claim, however, as growth in the company may be necessary for growth in performance. A final explanation may be that winner companies consolidate their operations and dispose of unprofitable investments before extreme performance begins.

The percentage change in inventory to total assets (CH_INVtTA) is significantly higher in winners than non-winners. This indicates that inventory becomes a greater component of total assets in winners than in non-winners as the start of extreme performance approaches. This may either indicate that winners build up inventory, perhaps in order to provide for the possibility of a growth in sales, or that the company consolidates its assets and focuses on its profitable operations. This second option is consistent with the depreciation hypothesis mentioned above.

The percentage change in total assets is smaller in winners than non-winners. This may once again be consistent with the hypothesis that winners tend to consolidate their operations before extreme performance. If this is the case, the lower return on assets in winner shares indicates that the return from these changes has not come through yet. Furthermore, the asset turnover ratio (the ratio of sales to total assets) increases faster in winners, reiterating the hypothesis of either consolidated operations or of increased sales.

The difference between the percentage change in sales and the percentage change in accounts receivable (CH_ARlSALES) is greater in winners than non-winners. This may indicate that either sales increases faster in winners than non-winners as mentioned earlier, or that accounts receivable does not increase as fast. According to Lev and Thiagarajan (1993) this is a positive signal of performance as it indicates an ease in selling products and hence negates the necessity to offer credit extensions.

(v) Industry position variables

Contrary to the findings of O'Neil (2002) and Reinganum (1988), winners are in a worse position relative to their economic groups in a number of measures. In particular, winners are in a lower position in terms of operating margin, net margin and pretax profit margin. As mentioned earlier this is a surprising result as one would expect winners to be yielding higher profits per unit of sales. Furthermore, winners are in a worse position in terms of return on equity, although this is consistent with the findings of van Rensburg (2001) as mentioned earlier.

In summary, winners tend to be value shares, indicated by the low market-to-book ratio. Winners are not particularly strong on some of the traditional fundamental measures and in fact seem to be doing worse on many measures than their competitors. On the other hand, they do seem to have increasing sales and increasing profitability in sales. Winners also seem to either not be investing too much in new assets or consolidating operations and focusing on profitable segments. These mixed signals seem to lead to a great deal of disagreement in the market, causing high volatility in trading. Furthermore, these mixed signals may be the cause of analysts not predicting the upcoming extreme performance, and hence lead to extreme performance when the potential of the share is finally identified.

5.3.2 Loser Signals

Table 5.3. below lists all signals which are significantly different between loser and non-loser shares at the 5 percent significance level. The variables are ranked according to the significance of the difference between loser and non-loser portfolios according to the chi-squared median test in each variable category. The medians and differences between medians are also included.

Once again, as in the previous section, if both a unadjusted variable and its logarithmically transformed version are found to be significant, only the original variable is shown in the table. Again this is because the original variable is more economically interpretable and will not hinder any of the non-parametric tests conducted in subsequent chapters.

Table 5.3. Significant Loser Signals

The table shows the results from the median test for significant loser signals at the 5% significance level along with numerous other statistics. For the median test, the T-statistic and p-value indicating the difference between loser and non-loser medians is shown for each variable. In addition, the medians and differences between medians in the loser and non-loser portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the values of the relevant variables are larger (+)or smaller (-) in loser shares. The table is sorted by the strength of the findings for each category of variables, judged by the magnitude of the T-statistics.

			Median Test					Summary
				P-Value		Median		
			T	Loser ≠ Control Ha: diff != 0	Loser	Non-Loser	Difference	
Valuation Measures		EY	24.1214	**0.0000**	0.0794	0.0962	-0.0168	-
		MTB	20.2230	**0.0000**	1.7300	1.3600	0.3700	+
		PE	13.8088	**0.0002**	11.8000	9.7000	2.1000	+
Technical Indicators		AGE	49.7497	**0.0000**	7.4778	8.7833	-1.3056	-
		MOM_24	23.2725	**0.0000**	0.0362	0.2214	-0.1852	-
		MOM_18	22.3749	**0.0000**	-0.0073	0.1758	-0.1831	-
		MAXP_24	20.7235	**0.0000**	0.7217	0.7771	-0.0553	-
		MAXP_12	18.1750	**0.0000**	0.8000	0.8486	-0.0486	-
		MOM_12	14.0969	**0.0002**	0.0087	0.1140	-0.1053	-
		VOL_6	4.9555	**0.0260**	0.5414	0.6547	-0.1133	-
		VOL_12	4.1606	**0.0414**	0.5055	0.5910	-0.0855	-
Fundamental Measures	Profitability	SALEStCASH	39.5719	**0.0000**	7.2024	10.7330	-3.5306	-
		CH_EBTtSALES	5.0994	**0.0239**	-0.0111	-0.0383	0.0271	+
		GM	4.9687	**0.0258**	0.1522	0.1903	-0.0381	-
		CH_SALES	4.2156	**0.0401**	0.1217	0.1481	-0.0263	-
	Performance	CH_DPS	29.1658	**0.0000**	0.0476	0.1622	-0.1145	-
		EARNG_60	13.3656	**0.0003**	0.1179	0.0868	0.0311	+
		ROE	10.8121	**0.0010**	0.2107	0.1814	0.0293	+
		EPS	7.2209	**0.0072**	0.4300	0.6200	-0.1900	-
		DY	6.6537	**0.0099**	0.0203	0.0253	-0.0050	-
		EARNG_24	4.3362	**0.0373**	0.0232	0.0328	-0.0096	-
	Leverage	CH_CAPGEAR	10.9962	**0.0009**	0.0135	-0.0260	0.0395	+
	Efficiency	CH_ARtSALES	30.3352	**0.0000**	0.2263	0.1228	0.1035	+
		CH_TA	26.3647	**0.0000**	0.1751	0.1180	0.0571	+
		CH_DEP	16.8042	**0.0000**	0.2508	0.1658	0.0850	+
		CH_INV	12.4066	**0.0004**	0.2658	0.1292	0.1366	+
		WCtTA	11.5689	**0.0007**	0.7183	0.6080	0.1103	+
		CH_INVTURN	8.1578	**0.0043**	0.0817	0.2506	-0.1689	-
		CH_ARtSALES	6.6150	**0.0101**	0.0124	-0.0283	0.0406	+
		INVtTA	5.9907	**0.0144**	0.1361	0.1558	-0.0197	-
		CH_ASSTURN	5.5092	**0.0189**	-0.0067	0.0184	-0.0250	-
Industry Position		POS_SALES	35.1639	**0.0000**	8.0000	9.0000	-1.0000	-
		POS_ROE	19.8587	**0.0000**	7.0000	9.0000	-2.0000	-
		POS_OP	17.5537	**0.0000**	9.0000	11.0000	-2.0000	-
		RSTRENGTH_ALSI	12.0839	**0.0005**	0.4348	0.5135	-0.0787	-
		RSTRENGTH_SUB	7.8655	**0.0050**	0.4405	0.5111	-0.0706	-
		WRSTRENGTH_ALSI	6.0485	**0.0139**	0.4589	0.5141	-0.0551	-
		WRSTRENGTH_SUB	4.4698	**0.0345**	0.4646	0.5126	-0.0480	-

(i) Information variables

As with the winner shares, no information variables are found to be significant signals for extreme losers. Once again this may be attributed to the fact that there is a severe lack of data available for these variables (see section 3.7). An area for future research could therefore be to conduct a study of this nature when more data is available for information variables such as institutional ownership, management ownership and insider trading.

(ii) Valuation measures

The valuation measures all seem to indicate that loser shares are overvalued before they begin their extreme performance. This is evidenced by higher price-earnings (PE) ratios which indicate that loser shares are priced at a higher multiple of earnings than non-loser shares. This is consistent with the earnings yield (EY) which is simply the inverse of the PE ratio and is lower in losers than non-losers. Furthermore, the market-to-book ratio tends to be higher in losers than non-losers indicating that the market prices these shares relatively higher when compared to their book values – this may also be a sign of overvaluation. This overvaluation and subsequent extreme loss may be consistent with some behavioural theories of finance (such as those of De Bondt and Thaler, 1985) which would attribute the result to an initial overreaction by the market and a subsequent correction.

(iii) Technical indicators

There are far more significant technical indicators for extreme losers than for extreme winners. Losers tend to be younger than non-losers, perhaps because less secure and established younger firms are generally more susceptible to large market movements.

Unlike winners, numerous momentum measures are significant signals for loser shares. 12, 24 and 18 month momentum measures are lower in losers than non-losers indicating that they have a history of relatively poor performance. This is reiterated by the MAXP variables which show that the share prices of losers tend to be lower as a percentage of both the one and two year highs in losers than in non-losers.

This may relate back to an overweighting of recent information and an underweighting of prior data by investors which leads to this momentum (DeBondt and Thaler, 1985). Furthermore, Griffin and Tversky (1992) show that people focus on the extremeness of news with insufficient consideration for its weight. Since extreme performers comprise the ultimate cases of extremeness, this explanation could very well apply. Alternatively, it may be due to investors not fully taking the implications of current on future earnings into account (Bernard and Thomas, 1989).

Finally, lower volumes traded in losers than non-losers are consistent with the theory of O'Neil (2002) that those shares for which there is a low demand will perform poorly.

(iv) Fundamental measures

Firstly, in terms of *profitability*, a lower sales to cash ratio in losers than non-losers may indicate that loser companies experience a decline in sales. This is also shown by a smaller CH_SALES, indicating that losers experience a slower growth in sales than the rest of the market. Alternatively, the low sales to cash ratio may indicate that the level of cash in the business is increasing, perhaps due to a lack of profitable investments or due to a decline in the efficiency of working capital management.

On top of the declining sales levels, it appears as if the remaining sales also become less profitable in losers, indicated by a smaller gross margin. This may be the result of an effort to stimulate these diminishing sales. This translates finally into a weaker bottom line, as losers experience substantially lower earnings per share than their non-loser counterparts.

This is not the only weak *performance measure*, however. It seems as if these lower earnings levels are a result of a lower 2 year earnings growth rate in losers. Interestingly, it seems as if this was not always the case as losers have higher 5 year earnings growth rates than non-losers. This finding may once again by consistent with theories of behavioural finance; the market originally overreacted to positive past performance, leading to an overvaluation of shares. When the prospects of the company begin to turn around it takes time for the market to overcome their original expectations, eventually overreacting to this new poor performance and leading to extreme loss.

An effort to find profitable investments or salvage operations may explain the much lower increase in dividend per share of losers when compared to non-losers. This eventually translates into a much lower dividend yield. Converse to winners, losers have higher returns on equity. This is once again consistent with the findings of van Rensburg (2001).

Additionally, it appears that losers also turn to debt in order to finance these efforts, as the leverage, in terms of the capital gearing ratio, of losers increases while the same measure declines for non-losers.

The last group of fundamental measures clearly indicates a decline in *efficiency*. A higher increase in accounts receivable as a percentage of sales could indicate declining sales levels or inefficient working capital management leading to a build-up of accounts receivable. Lev and Thiagarajan (1993) might attribute this result to an inability to sell products and hence the necessity to grant credit extensions in order to stimulate sales.

The hypothesis of a poor working capital situation is also suggested by a number of other variables. Firstly, there appears to be a much larger percentage increase in the levels of inventory held in losers than in non-losers, shown by CH_INV, possibly indicating an inability to sell stocks. A much lower percentage increase in inventory turnover in losers also shows a decline in the ability to dispose of stocks. Interestingly, despite these increases in inventory, inventory as a percentage of total assets is lower in losers than non-losers. This might suggest an even more substantial increase in total assets.

Despite this fast increase in total assets, as shown by a much greater percentage increase in total assets in losers than non-losers, working capital as a percentage of total assets still seems to be higher in losers. This shows that there is a build-up in working capital over and above the increase in inventory. This may be a sign that the problems of working capital management extend beyond inventory to other areas such as cash and accounts receivable (as mentioned earlier).

The question of why the company increases its holdings of assets when it is in a poor situation arises. As suggested by the lower dividend yield, this may be the result of an effort to find new profitable investments to turn their situation around or an effort to salvage existing operations. This may also explain the larger percentage increase in depreciation experienced by losers, as the larger asset base now leads to greater levels of depreciation. However, this increase in investment is not translating into increased

sales as the asset turnover ratios actually experiences a decline while the rest of the market experiences an increase.

Interestingly, of the nine fundamental signals that are found to be significant for both winners and losers, eight are opposite in direction. This makes logical sense as it would be expected that winners and losers have opposite fundamentals. The only variable which is common in direction is dividend yield, which is found to be smaller in both winner and loser shares than non-winner and non-loser shares respectively. This may be because winners pay less dividends in order to reinvest in profitable operations while losers pay less dividends in an attempt to save operations.

(v) Industry position

Once again these seem to be the complete opposite to those found significant in winners. Losers tend to be doing better in terms of sales growth than other companies in its economic group. This contradicts the findings in fundamental variables and therefore might be a sample-specific finding. In addition, losers are in a better position in terms of both operating margins and returns on equity.

A result which does make intuitive sense is that losers have a lower 12 month relative strength than non-losers. This means that losers have experienced worse returns over the preceding 12 months than both the other shares in the entire market and the other shares in the relevant index (either the financial industrial index or the resources index).

In summary, losers tend to be overvalued shares. They experience weak fundamentals before their decline, particularly a substantial decrease in sales. Working capital management also deteriorates as inventory, cash and accounts receivable begin to build up. They attempt to fix this scenario by investing in more assets, financed both through lower dividends and though an increase in debt. These efforts do not seem to filter through to the bottom line as losers experience a decline in profitability and earnings, and weaker performance than the rest of the market.

Appendix B.6. illustrates the distributions of each variable for the winner, loser and control portfolios. This graphical depiction of Appendices C.1. and C.2. clearly shows

how the distributions vary between these three portfolios. The difference in distribution functions between the subsamples of a number of these variables is also evident from these graphs, providing further justification for use the non-parametric median test as opposed to the Wilcoxon Rank Sum Test or the Student t-test.

5.4 Evolution Towards Extreme Performance

If extreme performers do display statistically significant differences to the control group, there may have been some kind of evolution into that state which prepares them for extreme performance. The graph below shows the average share price movement in an extreme winner for a period of four years before to four years after the start of extreme performance.

Figure 5.1. Pattern of Extreme Winner Performance

The graph shows the average share price movement of extreme winners for a period spanning from four years before until four years after the start of extreme performance. The share price is set to a value of 100 at time 0, the start of the extreme performance (where the share price at least doubles within 12 months). The graoh is based on 1104 observations of extreme winners over the period from January 1995 until December 2004 on the JSE Securities Exchange.

Some interesting observations can be drawn from the above graph. Firstly, it is obvious that extreme winners perform poorly for the four years before extreme performance, more than halving in value over this period. This may be the result of an

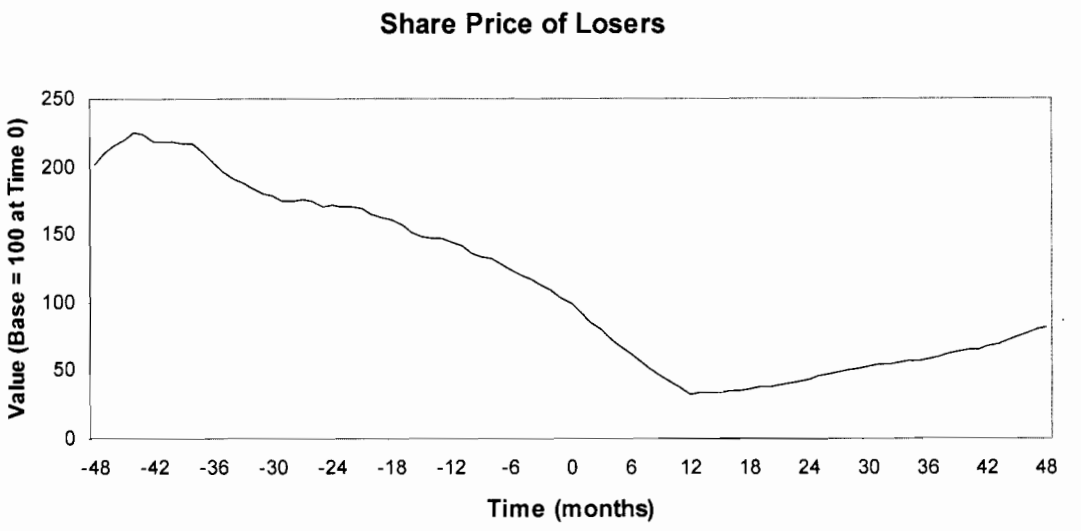
overreaction to bad news or herd-behaviour in the market creating downward momentum in the share. Secondly, once extreme performance begins, it continues for a significant period of time. Similarly, this may a result of overreaction to good news and herd-behaviour creating positive momentum which pulls the share price up to unjustified levels.

A similar analysis can be conducted with extreme losers, as illustrated in Figure 6.2. below. It appears that losers evolve along a similar pattern to winners: they begin with poor performance over the preceding four years, also more than halving in value over this period. However, after their extreme loss they seem to immediately recover and increase consistently in value over the subsequent three years.

This suggests that unlike winners, there is no turnaround in losers at start of their extreme performance. Instead, the extreme loss is the culmination of poor historical performance. This may also be explained in terms of an overreaction to bad news about the company which leads to negative momentum. It is the climax of this poor performance however, as the share immediately begins to recover, perhaps due to the markets gradual realization of their overreaction and subsequent correction (DeBondt and Thaler, 1985).

Figure 5.2. Pattern of Extreme Loser Performance

The graph shows the average share price movement of extreme losers for a period spanning from four years before until four years after the start of extreme performance. The share price is set to a value of 100 at time 0, the start of the extreme performance (where the share price at least halves within 12 months). The graph is based on 755 observations of extreme losers over the period from January 1995 until December 2004 on the JSE Securities Exchange.



This analysis definitely seems to suggest that there is a clear evolution in these shares before they become extreme performers. In order to determine whether significant changes occur in a security before performing extremely, the variables in the buy or sell period are compared with the variables one, three, six, nine and twelve months before the signal for extreme winners and extreme losers respectively. Once again the median test is used to indicate any significant change. This is similar to the method used in Reinganum (1988), although he only focuses on extreme winners.

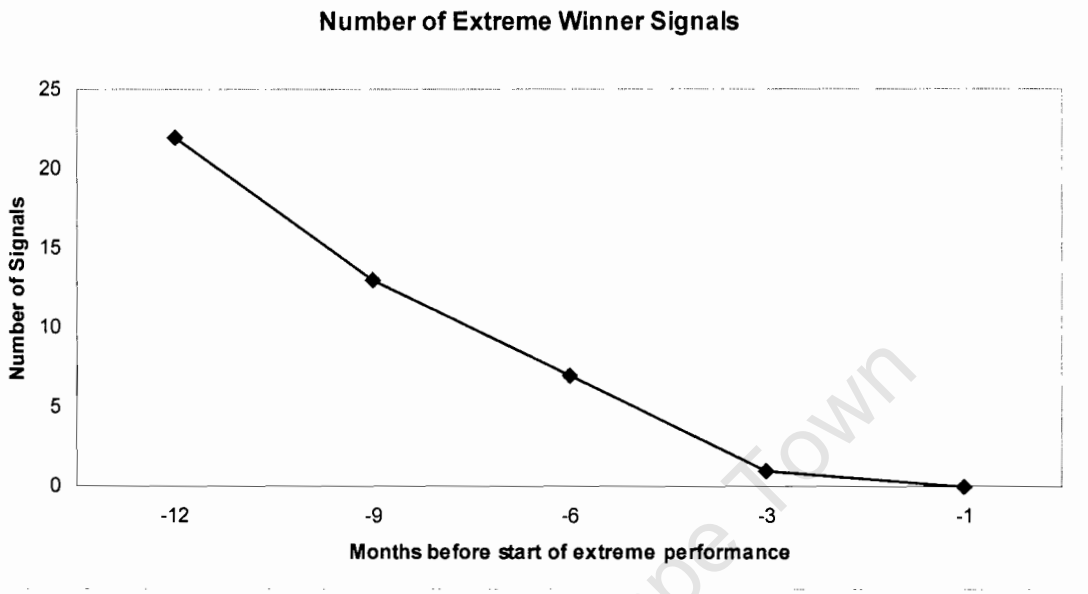
If significant changes in variables are found in the lead-up to extreme performance, it will be indicative of some evolutionary process common to all extreme performers. The benefit of such a finding would be two-fold. Firstly, it would allow potential extreme performers to be identified and monitored earlier than the period in which there is a buy signal. Secondly, it will reveal further criteria which securities display before performing extremely and so might add further predictive power to a model of extreme performance.

The results of the median test for winners can be found in Appendices C.4. to C.8. Figure 5.3. below summarises the number of variables which are significantly different between the winners at the start of extreme performance and one, three, six, nine and twelve months before this start date. The results shown are consistent with the hypothesis of some sort of evolution towards extreme performance: as the time

period of extreme performance approaches, the shares converge on the characteristics of the typical winner share.

Figure 5.3. Number of Winner Evolution Signals

The graph shows the number of variables that are significantly different between the winner shares at the start of extreme performance and 1, 3, 6, 9 and 12 months before the start of extreme performance. Variables are judged to be significantly different if their medians are found to be significantly different by the chi-squared median test at the 5% significance level.



One question which arises is whether the shares evolve from the characteristics of a typical share, or whether they display characteristics which distinguish them from other shares long before they begin their extreme performance. The graph below compares the significant winner signals and the significant evolution signals for winners a specified amount of time before extreme performance. The number of similar signals is plotted as a percentage of the 31 significant winner signals.

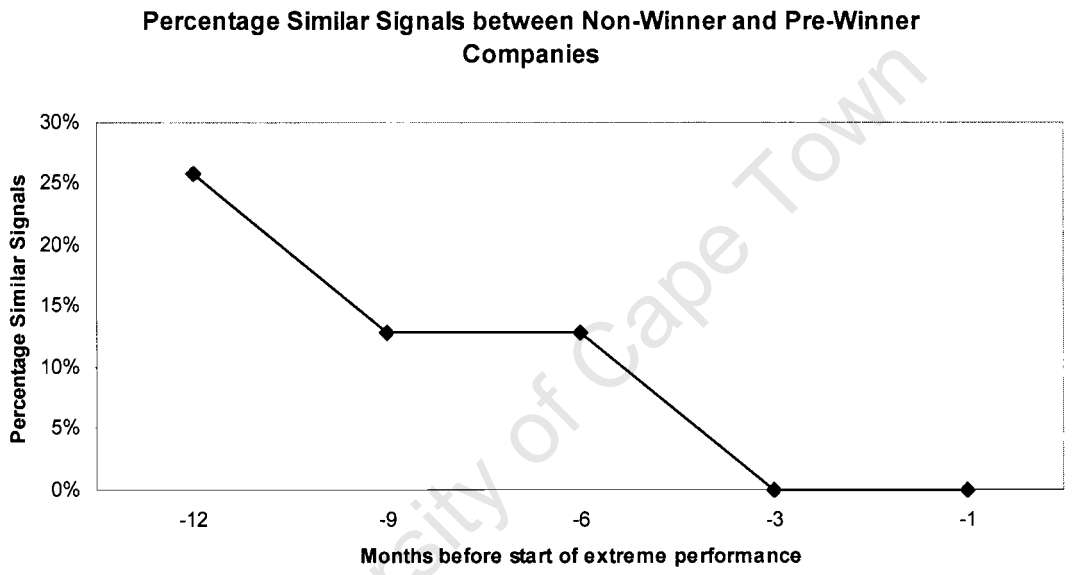
It is clear from the graph that there are some variables which are similar between winners before extreme performance and non-winners in periods long before the start of extreme performance. As the start of extreme performance approaches, however, these similarities disappear completely.

An interesting point is that although the signals shows some similarity 12 months before the start of extreme performance, only 26 percent of signals are similar. One would expect this proportion to increase if the nature of extreme performers even further back in time were considered. In addition, this implies that value can be added by considering the characteristics of extreme winners in periods before the start of the

their extreme performance as there is a definite difference between these and non-winner shares. Furthermore there is a clear evolutionary process.

Figure 5.4. Percentage Similar Winner Evolution and Non-winner signals

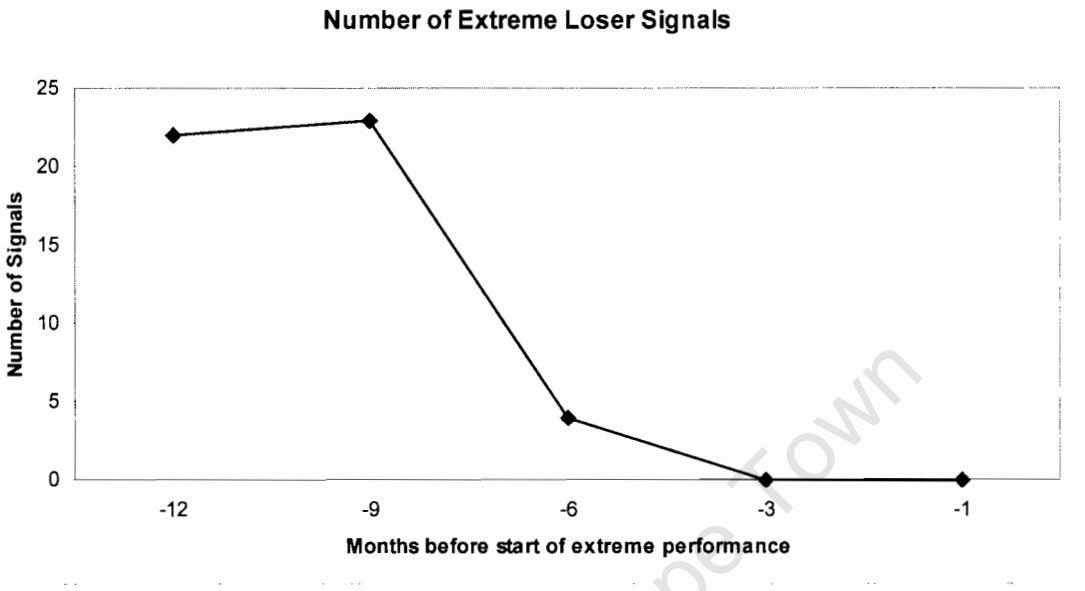
The graph compares the significant signals that distinguish winner and non-winner companies with those signals that distinguish winner companies at the start of extreme performance and the same companies a specified number of months before this start. The graph shows the percentage of significant winner signals that are identical in direction to the significant evolution signals. In other words, this is the percentage of signals that are identical in non-winner and pre-winner shares 1, 3, 6, 9 and 12 months before the start of extreme performance. Variables are judged to be significantly different if their medians are found to be significantly different by the chi-squared median test at the 5% significance level.



A similar procedure can be carried out with extreme losers. The results for losers can be found in Appendix C.9. to C.13. Figure 5.5. below shows the number of variables that are significantly different in loser shares at the start of extreme performance and one, three, six, nine and twelve months before extreme performance. Once again there seems like a clear evolutionary process as the characteristics of the losers converge on some state. It does seem, however, that differences exist between pre-losers and losers until much later and then there is a much faster and more drastic evolution into the state of a loser.

Figure 5.5. Number of Loser Evolution Signals

The graph shows the number of variables that are significantly different between the loser shares at the start of extreme performance and 1, 3, 6, 9 and 12 months before the start of extreme performance. Variables are judged to be significantly different if their medians are found to be significantly different by the chi-squared median test at the 5% significance level.

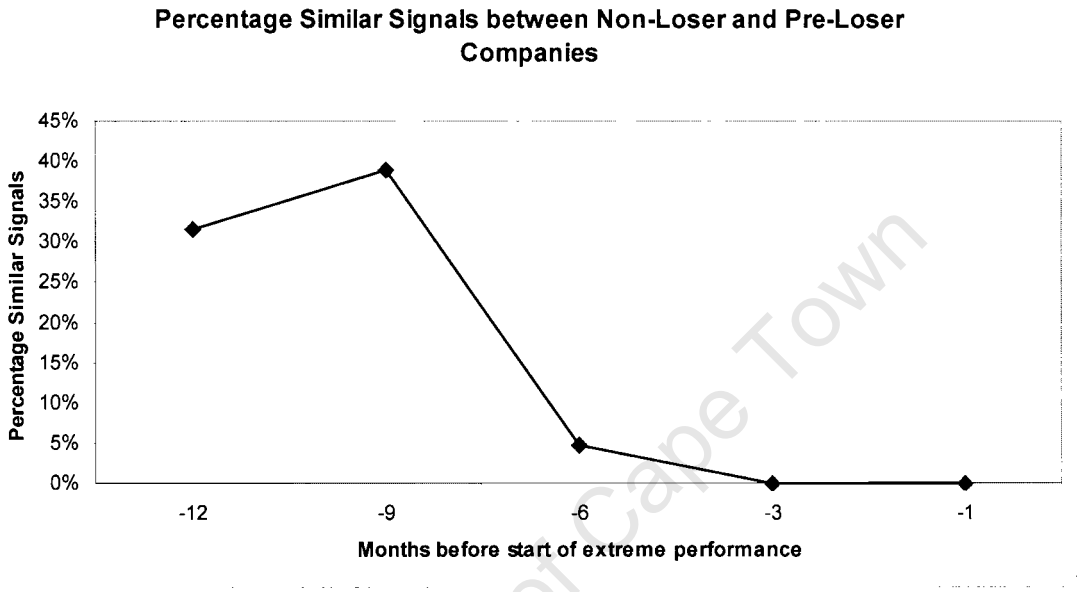


This point is further illustrated by Figure 5.6. A greater percentage of signals are similar between non-extreme performers and extreme performers a prespecified number of months before the start of extreme performance in loser than winner companies. For example, 32 percent of signals are similar between loser companies twelve months before the start of performance and non-loser shares whereas only 25 percent are similar in the case of winner companies. This may once again indicate that the evolution towards becoming an extreme loser is a more drastic process than for winners.

Another point evident from these graphs is that losers seem to recover slightly and become more like non-loser shares between nine and twelve months before the start of their loss. This would suggest that unlike winner shares, there does not appear to be too much point in analyzing extreme losers more than twelve months before extreme performance.

Figure 5.6. Percentage Similar Loser Evolution and Non-loser signals

The graph compares the significant signals that distinguish loser and non-loser companies with those signals that distinguish loser companies at the start of extreme performance and the same companies a specified number of months before this start. The graph shows the percentage of significant loser signals that are identical in direction to the significant evolution signals. In other words, this is the percentage of signals that are identical in non-loser and pre-loser shares 1, 3, 6, 9 and 12 months before the start of extreme performance. Variables are judged to be significantly different if their medians are found to be significantly different by the chi-squared median test at the 5% significance level.



A more detailed discussion of which variables are significantly different in these evolution tests for both winners and losers follows.

5.4.1 Winner Signals

Table 5.4. below lists all signals which are significantly different between winner shares at the start of their extreme performance (winners) and the same shares one, three, six, nine and twelve months earlier (pre-winners) at the 5 percent significance level. The variables are ranked according to the significance of the difference between winner and pre-winner portfolios according to the chi-squared median test in each variable category. The medians and differences between medians are also included. As in previous sections, if a variable and its logarithmically transformed version are both significant, only the original variable is shown in the table.

Table 5.4. Significant Winner Evolution Signals

The table shows the results from the median test for significant winner evolution signals at the 5% significance level along with numerous other statistics. For the median test, the T-statistic and p-value indicating the difference between winner medians at the start and 1, 3, 6, 9 and 12 months before extreme performance is shown for each variable. In addition, the medians and differences between medians in the winner and pre-winner portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the values of the relevant variables are (+) or smaller (-) in winners at the start of extreme performance. The table is sorted by the strength of the findings for each category of variables, judged by the magnitude of the T-statistics.

			Median Test		Median			Summary
			Period 0 ≠ Period -t					
			T	Ha: diff != 0	Period 0	Period -t	Difference	
t = 12								
Valuation Measures		EY	12.4724	**0.0004**	0.0971	0.0840	0.0131	+
		PE	4.4861	**0.0342**	9.4000	10.7000	-1.3000	-
Technical Indicators		SDEV_VOL	6.6259	**0.0101**	0.6407	0.4501	0.1906	+
Fundamental Measures	Profitability	CH_SALES	8.2683	**0.0040**	0.1431	0.1074	0.0358	+
		OPINCITA	8.0557	**0.0045**	0.0798	0.0640	0.0158	+
		CH_EBTtSALES	7.8563	**0.0051**	-0.0371	-0.1090	0.0719	+
		GM	5.5327	**0.0187**	0.2150	0.1853	0.0297	+
	Performance	EARNG_24	13.6235	**0.0002**	0.0333	0.0132	0.0201	+
		CH_DPS	10.8785	**0.0010**	0.1667	0.0931	0.0736	+
		ROE	10.0058	**0.0016**	0.1692	0.1361	0.0331	+
		DY	7.9989	**0.0047**	0.0229	0.0198	0.0031	+
		ROA	5.8031	**0.0160**	0.0659	0.0476	0.0183	+
	Efficiency	CH_ASSTURN	11.0458	**0.0009**	0.0337	-0.0009	0.0346	+
		CH_INVTURN	8.3825	**0.0038**	0.3670	0.0905	0.2765	+
		CH_TA	8.0430	**0.0046**	0.0968	0.1241	-0.0273	-
		CH_DEP	5.7905	**0.0161**	0.1099	0.1428	-0.0329	-
		CH_INVITA	4.9782	**0.0257**	0.0028	0.0000	0.0028	+
Industry Position		POS_NET	9.1318	**0.0025**	12.0000	14.0000	-2.0000	-
		POS_OP	7.2326	**0.0072**	12.0000	14.0000	-2.0000	-
		POS_PRETAX	4.4636	**0.0346**	11.0000	13.0000	-2.0000	-
t = 9								
Valuation Measures		EY	5.2763	**0.0216**	0.0971	0.0877	0.0094	+
Technical Indicators		SDEV_VOL	8.0476	**0.0046**	0.6407	0.4357	0.2050	+
		MOM_3	6.4025	**0.0114**	0.0388	0.0073	0.0315	+
Fundamental Measures	Profitability	CH_SALES	6.2080	**0.0127**	0.1431	0.1074	0.0358	+
	Performance	EARNG_24	10.0190	**0.0015**	0.0333	0.0184	0.0149	+
		DY	8.8187	**0.0030**	0.0229	0.0194	0.0035	+
		CH_DPS	5.8938	**0.0152**	0.1667	0.1071	0.0595	+
		ROE	3.9278	**0.0475**	0.1692	0.1448	0.0244	+
	Efficiency	CH_TA	7.4700	**0.0063**	0.0968	0.1317	-0.0349	-
		CH_INVISALES	3.8502	**0.0497**	-0.0433	-0.0087	-0.0345	-
t = 6								
Technical Indicators		MOM_3	8.1927	**0.0042**	0.0388	0.0051	0.0338	+
		MOM_6	7.2602	**0.0070**	0.0666	0.0257	0.0409	+
		SDEV_VOL	6.2108	**0.0127**	0.6407	0.4819	0.1588	+
Fundamental Measures	Efficiency	CH_ASSTURN	7.5380	**0.0060**	0.0337	0.0010	0.0327	+
		CH_INVTURN	5.3342	**0.0209**	0.3670	0.0905	0.2765	+
		CH_TA	4.6727	**0.0306**	0.0968	0.1232	-0.0265	-
t = 3								
Technical Indicators		MOM_6	4.1257	**0.0422**	0.0666	0.0403	0.0263	+

(i) Information variables

As with the previous set of tests, no information variables are found to be significantly different between the winner shares at the start and any amount of months before the start of extreme performance.

(ii) Valuation measures

Valuation measures do seem to be important on the other hand. In particular, price-earnings ratio seems to decrease as the time to extreme performance approaches (and hence earnings yield increases). This implies that the shares actually become more undervalued as this time gets closer and is consistent with the price decline before extreme performance shown in Figure 5.1. This might also be partially explained by the market not fully realising the potential of increased earnings, thus creating the extreme performance which later ensues when the market catches on.

It does seem, however, that the value of these pre-winners converge on the undervaluation relatively early, with no significant difference between the valuation measures in winners at the start and as much as six months before the start of extreme performance.

(iii) Technical indicators

The technical indicators seem to be the most consistently important in the evolution tests, with at least one significant technical indicator three, six, nine and twelve months before the start of performance. The volatility of trading, measured by SDEV_VOL, increases consistently from twelve months before the start of extreme performance until three months before where it converges on the volatility at the start of extreme performance. In terms of the arguments of Glickman et al (2001) this would imply that disagreement in the market about the future prospects of the company increases as the start date approaches.

Momentum changes significantly as the start of extreme performance approaches. Three month momentum falls significantly between twelve and six months before extreme performance. It decreases by so much, in fact, that this effect spills over onto the less volatile six month momentum. Thereafter, momentum begins to converge on its value at the start of extreme performance. This may once again be an indicator of the disagreement in the market as to the prospects of extreme performers. It also indicates that these shares are spotted relatively late.

(iv) Fundamental measures

It is clear that as the start of performance approaches, the number of significantly different fundamental signals decreases. This implies that the fundamentals of pre-winner converge of those necessary before extreme performance starts.

In terms of *performance*, two-year earnings growth is lower in pre-winners than in winners, perhaps supporting a theory of overreaction to previous bad news which leads to the initial undervaluation of the share, with subsequent overreaction to good performance which leads to the extreme performance.

This change in the earnings growth of the company may be explained by some of the other fundamental variables. Firstly, in terms of *efficiency*, it is evident that the changes in the asset turnover ratio and the inventory turnover ratio are lower in pre-winners than winners, implying that there is some sort of acceleration in the productivity of assets, and in particular inventory, as the start date approaches.

This in turn may be aided by increased *profitability* with an accelerating level of sales, evidenced by CH_SALES increasing as the start of performance approaches and a higher gross margin when compared to twelve months earlier. This may also be caused by a decelerating level of assets, linking back to the earlier hypothesis that winners tend to consolidate operations before extreme performance ensues. This seems to result in an increasing return on assets.

Interestingly, it seems as if dividends increase in winners at an accelerating rate (increasing CH_DPS) resulting in higher dividend yields as the start of performance approaches. This means that winner companies pump less money back into operations as the start date approaches, even though they still end up paying less dividends than the rest of the market. One would therefore expect that if data more than twelve months before the start was considered, there would be some point at which winners began paying less dividends in order to reinvest and later some point when they once again begin increasing dividends. This turning point may send a signal to the market that the major reinvestment is complete and the resulting extreme performance is to ensue.

(v) Industry position

There is only a difference in the position variables twelve months before the start of extreme performance. As can be expected, winners seem to improve positionally in terms of net, operating and pretax profit margins when compared to other companies in their economic groups. This is in line with the findings of O'Neil (2002) and Reinganum (1988).

In summary, the evolution process of winner shares seems to be characterized firstly by an increase in the undervaluation of these shares. In addition, there seems to be increasing disagreement in the market as to the prospects of extreme winners, even as momentum begins to gradually increase.

However, the ensuing extreme performance does seem to be a result of improving fundamentals perhaps due to higher past investment: sales accelerates at the same time as increasing profitability; working capital management and asset efficiency improve; finally these improvements translate into the bottom line as earnings growth begins to pick up and dividend payouts begin to improve. These improvements also cause winners to improve positionally in terms of a number of fundamental measures relative to other companies in the same economic groups.

5.4.2 Loser Signals

Table 5.5. below lists all signals which are significantly different between loser shares at the start of their extreme performance (losers) and the same shares one, three, six, nine and twelve months earlier (pre-losers) at the 5 percent significance level. The variables are ranked according to the significance of the difference between loser and pre-loser portfolios according to the chi-squared median test in each variable category. The medians and differences between medians are also included. Similar to previous sections, if an original variable and its logarithmically transformed variable are both found to be significant, only the original variable is included in the table.

Table 5.5. Significant Loser Evolution Signals

The table shows the results from the median test for significant loser evolution signals at the 5% significance level along with numerous other statistics. For the median test, the T-statistic and p-value indicating the difference between loser medians at the start and 1, 3, 6, 9 and 12 months before extreme performance is shown for each variable. In addition, the medians and differences between medians in the loser and pre-loser portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the values of the relevant variables are larger (+) or smaller (-) in losers at the start of extreme performance. The table is sorted by the strength of the findings for each category of variables, judged by the magnitude of the T-statistics.

			Median Test		Median			Summary
			Period 0 ≠ Period -t					
			T	Ha: diff != 0	Period 0	Period -t	Difference	
t = 12								
Technical Indicators		AGE	6.1640	**0.0130**	7.4778	6.4782	0.9996	+
		MOM_6	5.2602	**0.0218**	0.0246	-0.0058	0.0304	+
		MOM_24	5.0562	**0.0245**	0.0362	0.1430	-0.1068	-
Fundamental Measures	Profitability	SALEStCASH	7.8024	**0.0052**	7.2024	8.5499	-1.3475	-
	Performance	EARNG_12	21.6868	**0.0000**	0.0142	0.0073	0.0069	+
		CH_DPS	12.7725	**0.0004**	0.0476	0.1667	-0.1190	-
		ROE	8.5157	**0.0035**	0.2107	0.1768	0.0339	+
		REVISION_12	5.0561	**0.0245**	-0.0685	-0.0247	-0.0438	-
	Leverage	CH_CAPGEAR	5.6020	**0.0179**	0.0135	-0.0321	0.0456	+
	Efficiency	CH_SAISALES	21.1665	**0.0000**	0.0832	-0.1855	0.2687	+
		CH_DEP	17.6610	**0.0000**	0.2508	0.1325	0.1183	+
		ACCtTA	16.2342	**0.0001**	-0.0216	-0.0003	-0.0213	-
		CH_ARISALES	15.3044	**0.0001**	0.0124	-0.0869	0.0993	+
		CH_TA	10.0126	**0.0016**	0.1751	0.1309	0.0443	+
		WCtTA	9.4391	**0.0021**	0.7183	0.6438	0.0745	+
		CH_ARtSALES	7.9359	**0.0048**	0.2263	0.1657	0.0606	+
		INVtTA	6.8491	**0.0089**	0.1361	0.1681	-0.0321	-
		CH_ASSTURN	6.7988	**0.0091**	-0.0067	0.0498	-0.0565	-
Industry Position		POS_NET	9.2632	**0.0023**	10.0000	9.0000	1.0000	+
		POS_SALES	5.8155	**0.0159**	8.0000	6.0000	2.0000	+
		POS_PRETAX	4.6877	**0.0304**	10.0000	9.0000	1.0000	+
t = 9								
Technical Indicators		VOL_12	7.2692	**0.0070**	0.5055	0.6663	-0.1608	-
		VOL_6	6.4432	**0.0111**	0.5414	0.7728	-0.2314	-
		SDEV_VOL	4.4776	**0.0343**	0.4990	0.6368	-0.1379	-
Fundamental Measures	Profitability	SALEStCASH	6.0334	**0.0140**	7.2024	8.1046	-0.9022	-
	Performance	EARNG_12	15.7543	**0.0001**	0.0142	0.0077	0.0064	+
		ROE	4.3621	**0.0367**	0.2107	0.1785	0.0322	+
		CH_DPS	3.9697	**0.0463**	0.0476	0.1084	-0.0608	-
	Efficiency	ACCtTA	10.3202	**0.0013**	-0.0216	-0.0037	-0.0180	-
		CH_ARISALES	9.0024	**0.0027**	0.0124	-0.0824	0.0948	+
		CH_TA	7.5840	**0.0059**	0.1751	0.1276	0.0475	+
		CH_DEP	6.9247	**0.0085**	0.2508	0.1412	0.1096	+
		INVtTA	6.0727	**0.0137**	0.1361	0.1674	-0.0313	-
		WCtTA	5.9840	**0.0144**	0.7183	0.6477	0.0707	+
		CH_ASSTURN	5.6025	**0.0179**	-0.0067	0.0359	-0.0425	-
		CH_SAISALES	4.9729	**0.0257**	0.0832	-0.0862	0.1694	+
		CH_ARtSALES	3.8906	**0.0486**	0.2263	0.1851	0.0412	+
Industry Position		POS_NET	6.4244	**0.0113**	10.0000	9.0000	1.0000	+
		WRSTRENGTH_ALSI	6.0690	**0.0138**	0.4589	0.3981	0.0608	+
t = 6								
Information Variables		MAN_OWN	5.7602	**0.0164**	0.5700	0.7100	-0.1400	-
Fundamental Measures	Performance	EARNG_12	4.6260	**0.0315**	0.0142	0.0104	0.0038	+
	Efficiency	CH_ARISALES	6.0326	**0.0140**	0.0124	-0.0644	0.0768	+
		CH_ASSTURN	4.4090	**0.0358**	-0.0067	0.0189	-0.0255	-

As is evident from the above table, there are only significantly different variables between losers and pre-losers twelve, nine and six months before the start of extreme performance. As mentioned earlier, this may indicate a drastic and fast convergence onto the properties of an extreme loser.

(i) Information variables

An information variable is significant for the first time. Six months before the start of the extreme loss, management ownership decreases significantly. This result makes logical sense as insiders, who know most about the prospects of the business, would be likely to divest themselves of an unprofitable business. However, as mentioned earlier, too much emphasis should not be placed on these results due to the lack of data available for the variable.

(ii) Valuation measures

No valuation measures are significantly different between losers and the same shares up to twelve months before the start of extreme performance. This implies that the shares are overvalued from long before the start of the extreme loss.

(iii) Technical indicators

A number of technical measures are significant in explaining the evolution process. The most important of these when considering the twelve month pre-losers is age. This merely shows that the age of pre-losers increases by one year as the start approaches and only serves to confirm the accurateness of the data. Since this adds no useful information, age is dropped. More interestingly, two year momentum is higher in losers than pre-losers twelve months before the start of extreme performance, whereas six month momentum is lower. This may link back into an behavioural argument where overreaction to past good news leads to unjustified returns which are later eroded when the market realises its error.

Furthermore, as much as nine months before the start of extreme performance the volumes traded of the loser shares begin to drop off significantly. This would be explained by O'Neil (2002) as a decrease in the demand for the share which could signal that since the market no longer wants the share it might be an extreme loser. Additionally, the trading volatility also decreases indicating that the market is reaching more of a consensus regarding the negative future prospects of the company.

(iv) Fundamental measures

A number of fundamental measures are also found to be significant. In terms of *performance*, twelve month earnings growth actually increases as the start of the

extreme loss approaches. However, earnings growth is worked out as the quotient of the change in twelve months earnings and price, and therefore this may simply be an indication of a decreasing price as the start approaches. This would correspond with the decreasing momentum.

This explanation also fits in better with the other fundamental measures which seem to indicate a slow-down in the performance of the loser companies. *Profitability* in terms of SALEStCASH decreases as the start approaches indicating decreased sales or an increase in cash (and hence *inefficiency* in working capital management). This spills over into accounts receivable and sales as the difference between these two measure increases at an accelerating rate as the start draws near, eventually causing working capital to form a greater portion of total assets.

This increase in working capital may partly explain the increase in total assets that losers seem display as their extreme loss approaches. It may also be explained by an increase in investment in new projects or operations in an effort to salvage the business, as mentioned earlier. This higher level of investment in turn leads to accelerated increases in depreciation. All of the money for this investment has to come from somewhere, causing dividends per share to decrease at an increasing rate and the amount of debt in the business to increase at an accelerating rate. This increased *leverage* (shown by CH_CAPGEAR) may also be used to cover losses and salvage other areas of the business. Interestingly, the return on equity increases as the start of the extreme loss approaches perhaps due to the leveraging effect of the increased debt on returns.

According to REVISION_12, analysts witness all of these negative fundamental signals and proceed to revise their estimates of the earnings of the company downwards. This links back into the growing consensus in the market about the poor upcoming performance of the loser companies.

(v) Industry Position

The positional variables all seem to decrease for loser companies. Economic group positions in terms of net margins, pretax profit margins and sales growth all decline for these companies, indicating their reduction in performance relative to the market.

Surprisingly, this does not spill over into the relative strength measures which show that the loser companies' positions relative to the rest of the market in terms of share performance actually improve as the start of the extreme loss approaches.

In summary, the evolution process of loser shares seems to be characterized by a lack of confidence in the future of the company by management. This view seems to be shared by analysts as well as by the market as a whole – analyst forecasts are revised downwards, the demand for the shares of the company decreases and the consensus of the upcoming negative performance increases.

These negative expectations are justified by deteriorating fundamentals such as declining sales, decreased working capital efficiency and increased spending on assets. This leads to deteriorating positions in numerous fundamental measures relative to other companies in the same economic groups. These declines are financed by both reduced dividends and increased borrowing.

5.5 Insignificant Variables

Many useful observation can be derived from not only those signals which are found to be significant but also those that are not found to be significant. The signals which were not found to be significant in any test are listed in Table 5.6. below:

Table 5.6. Insignificant Signals

The table shows those variables which were not significantly different between winners and non-winners, losers and non-losers, winners and pre-winners, and losers and pre-losers according to the chi-squared median test at the 5% significance level. The variables are listed according to the category in which they belong.

Category	Variable
Information Variables	INST_OWN
Valuation Measures	BETA
	MV
	LN_MV
Technical Indicators	VOL_3
	LN_VOL_3
	VOL_18
	LN_VOL_18
	VOL_24
	LN_VOL_24
	VOLtNOSHARES
	LN_VOLtNOSHARES
	MOM_1
	MAXP_60
Fundamental Measures	EARN
	EARNG_3
	EARNG_6
	CASHtDEBT
	CH_CF
	CH_CURRENT
	CH_ROE
	CH_SALESIGM
	DIVtCF
	LABOUR
	LN_EPS
	REVISION_36
Industry Position	CH_RSTRENGTH_ALSI
	CH_RSTRENGTH_SUB

Firstly, institutional ownership is not found to be a significant signal. As mentioned earlier this may not be an indication of the inadequacy of this variable, but rather a function of a lack of data. Future research should therefore investigate the usefulness of this variable when more data becomes available.

Secondly, considering the valuation measures, beta is found to be insignificant in all tests. This is an interesting result as it implies that the extreme performance witnessed in the sample cannot be explained by risk as measured by the Capital Asset Pricing Model. In terms of the joint hypothesis problem (Fama, 1991), this result could either help to disprove the efficient market hypothesis, or it could be a result of a misspecified risk-adjustment model.

Another surprising result is that size is not a significant factor in any of the tests. This seems to suggest that a size anomaly such as that of Banz (1981) is not responsible for the abnormal returns experienced by winner and loser companies. In terms of van Rensburg (2001), who finds that size is an important source of style-based risk on the JSE Securities Exchange, the abnormal returns are also not caused by this alternative source of risk. The findings are consistent with those of Reinganum (1988), however, who also does not find size to be a significant signal.

Thirdly, considering the technical indicators, it appears that both short- and long-term volumes traded are not significant signals of extreme performance. Other volume measures are found to be significant only in loser shares where volumes are significantly lower in losers than non-losers. This seems to suggest that there is a large demand for these loser shares in some period between three and 18 months before the extreme loss. This may be an indicator of overreaction, causing the price of the shares being bid up excessively, finally ending in the share price collapse when demand drops off.

One month momentum is also not a significant signal. This shows that very short-term returns cannot be used to predict extreme performers and a more holistic, long-term view is necessary to spot these shares. However, since MAX_P60 (the current price compared to the 60 month high) is also insignificant, it seems that taking too long-term a view will also not add any value to the predictive power of a model of extreme performance.

Fourthly, there are also a number of fundamental measures which are insignificant in the sample. Absolute earnings are not found to be a significant signal. Since this is closely related to the size of the company, this finding simply serves to verify the data as market capitalisation was also found to be insignificant.

Short-term earnings growth rates are also not useful predictors of extreme performance. This may relate back to the argument that a longer-term view needs to be considered in order to identify extreme performers. Alternatively, it may be explained by the fact that earnings are only published periodically and as such no

change in earnings would be reported over such a short time. The earlier argument that taking a very long-term view is not useful is verified by the insignificance of REVISION_36 which measures revisions of analysts' three year forecasts.

A few cash flow measures are also not found to be significant, indicating that cash flow issues may not be that important in extreme performers. In addition, labour productivity also does not appear important in the sample, perhaps due to the measure not accurately capturing this issue.

Finally, two positional variables are never found to be significant. Both of these indicate the change in relative strength of a company – how their performance in terms of share returns compare to other shares on the market. This indicates that extreme performers do not fair particularly differently to other companies in terms of returns – this of course changes when the extreme performance period begins.

Since these variables were never found to be significant they are dropped from this thesis from this point onwards.

5.6 Removal of perfectly correlated variables

In the previous sections, it was evident that a number of variables that are found to be significant may actually be a result of the same underlying factors. As shown in Section 4.7, a number of variables used in this study are perfectly correlated (see Table 4.1.) and therefore the information they portray overlaps. The inclusion of all of these correlated variables will therefore not add much statistical power to a model.

In addition, the inclusion of highly correlated variables introduces problems in estimating the significance of individual variables in a multiple regression model. This multicollinearity would make it difficult to separate the effects of the various variables in such a model. Furthermore, this may make the coefficients of a multiple regression model very sensitive to the number of observations used (Foster, 1978).

The aim of this section is to remove those variables which add no explanatory power due to their perfect correlation with another, more significant variable. This task is approached by first considering the T-statistics for each of these variables in each of the median tests for significant signals earlier in this chapter. The variable with the lower T-statistic in each pair of potentially perfectly correlated variables is earmarked for removal. It is only removed once it has been verified that the variables with which it is perfectly correlated have not already been dropped from the study.

To illustrate this procedure and its necessity, the following example is worth consideration. Assume there are three variables: Variable A, Variable B and Variable C. Assume further that A is perfectly correlated with B and B is perfectly correlated with C. A has the highest T-statistic, followed by B and then C. This information is summarized in the table below:

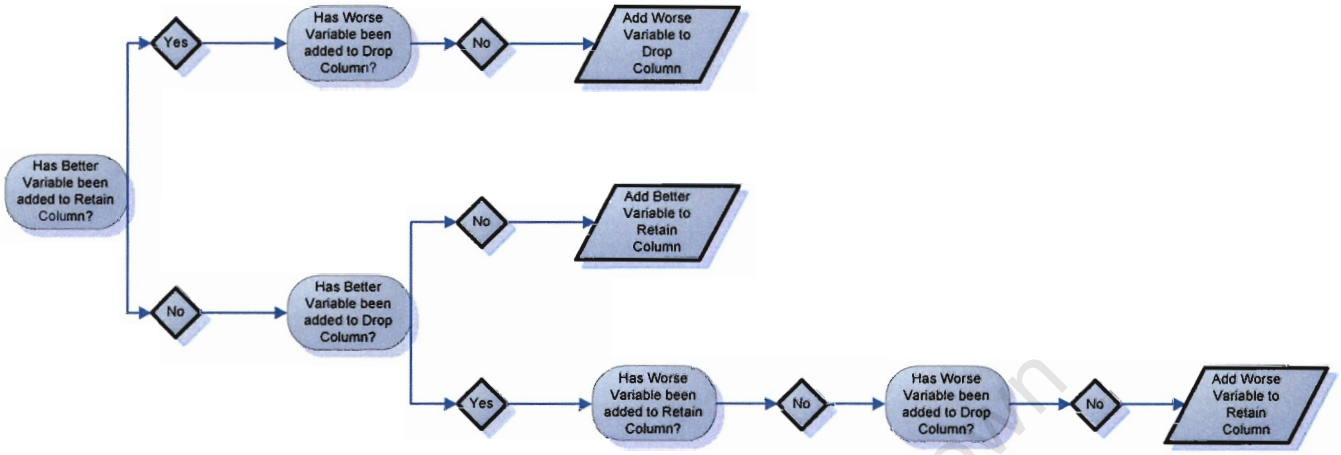
Variable	Perfectly correlated with:	T-stat rank
A	B	1
B	A, C	2
C	B	3

If the variable with the lower T-statistic out of each pairwise combination was simply dropped, Variable B would be dropped out of the A-B pair and Variable C would be dropped out of the B-C pair. This procedure would therefore only retain Variable A in the study. However, this would be an incorrect result as the effect of Variable C would be completely ignored – it is not related to A, and B, which could serve as a proxy for its effects, is also not included. It is therefore necessary to develop a procedure which takes the potential for such situations into account.

The program used begins by ranking all relationships for which the perfect correlation hypothesis could not be rejected by the strength of the correlation. It then loops through these ranks performing each of the following steps, and determines which variables to drop.

Figure 5.7. Procedure for Removing Variables

The diagram below illustrates the program used to remove perfectly correlated variables. The program ensures that the less significant out of a pair of perfectly correlated variables is removed. This variable is only removed, however, if the effect of other variables with which it is perfectly correlated and which are less significant than this variable, have been taken into account.



The final removal concerns price-earnings ratios and earnings yields. Since these two variables are inversely related their relationship is not picked up by the simple linear correlation measures. If both of these variables are significant for a particular test, the one with the greater T-statistic in the relevant median test for significant signals is retained while the other is dropped from the study.

A comprehensive list of which variables are dropped and which are kept for each signal test are listed in Table 5.7. below. A key for understanding the title referring to each test can be found in Appendix C.3.

Table 5.7. Discarded Perfectly Correlated Variables

The table below shows all variables which are dropped from the study for each of the twelve tests run: the tests comparing winners to non-winners (W1) and losers to non-losers (L1) as well as five evolution tests for winners (W2) and losers (L2) comparing the variables of extreme performers at the start of extreme performance to the variables of the same companies one, three, six, nine and twelve months before the start of extreme performance. A more comprehensive key explaining what each test title refers to can be found in Appendix C.3.

A variable is dropped from the study if it is found to be perfectly correlated with one or more other variables (results for these tests are summarized in Table 4.1.) and the effect of this variable is taken into account in the study through the inclusion of one or more of these perfectly correlated variables. In addition, if a variable which has been logarithmically transformed is found significant together with the original variable, the transformed variable is dropped. Finally, if price-earnings ratio and earnings yield are both found to be significant, the variable with the lower T-statistic from the median test is dropped.

Winner Tests					
W1	**W2_1**	**W2_3**	**W2_6**	**W2_9**	**W2_12**
POS_PRETAX					PE POS_PRETAX

Loser Tests					
L1	**L2_1**	**L2_3**	**L2_6**	**L2_9**	**L2_12**
PE RSTRENGTH_SUB WRSTRENGTH_SUB					POS_PRETAX AGE

The table shows that whenever both pretax profit margin and net margin are significant, net margin is always a more significant signal of extreme performance. Similarly, earnings yield is always more significant than price-earnings ratio, causing the latter to be dropped from the study completely. Finally, some similar relative strength measures are removed from the study.

5.7 Summary and Interpretation of Remaining Variables

5.7.1 Winner Signals

This elimination procedure leaves a reduced number of variables in the study. Table 5.8. below lists these variables for each test, as well as indicating whether winners are more likely to be larger or smaller than non- or pre-winners.

Table 5.8. Significant Variables after Adjustment for Perfect Correlation: Winners

The table below shows all variables which are included in the study for each of the six tests for winner signals run after adjustment for perfectly correlated and other related variables. These variables are derived in two stages. Firstly, those variables which are found to be significantly different among samples in terms of the median test (see Appendices C.1. and C.4. to C.8.) are included. Secondly, the list is reduced by removing those variables which are perfectly correlated to another more significant variable which is already included (see Table 5.7.). A comprehensive key explaining what each test title refers to can be found in Appendix C.3.

The variables under each test are ranked by the absolute value of the T-statistic from the median tests for differences between winners vs non-winners and winners vs winners *x* months before the start of extreme performance within each variable category. The first column under each test lists the significant variables. The second column indicates whether the winner portfolio is greater than or less than the respective non-winner or pre-winner portfolio.

	Winner Tests					
	W1	W2_1	W2_3	W2_6	W2_9	W2_12
Valuation Measures	MTB -				EY +	EY +
Technical Indicators	NOSHARES - SDEV_VOL +		MOM_6 +	MOM_3 + MOM_6 + SDEV_VOL +	SDEV_VOL + MOM_3 +	SDEV_VOL +
Fundamental Measures	OPINCtTA - PRETAX_PM - SALEStCASH + CAPGEAR + CH_DEP - CH_INVtTA + GFORECAST_12 - ROE - CH_TA - ROA - CH_QUICK - EARNG_60 - ACCtTA - CH_ARISALES - REVISION_24 - REVISION_12 - EARNG_12 + GM + CH_ASSTURN + DY - NTC +			CH_ASSTURN + CH_INVTURN + CH_TA -	EARNG_24 + DY + CH_TA - CH_SALES + CH_DPS + ROE + CH_INVISALES -	EARNG_24 + CH_ASSTURN + CH_DPS + ROE + CH_INVTURN + CH_SALES + OPINCtTA + CH_TA - DY + CH_EBTtSALES + ROA + CH_DEP - GM + CH_INVtTA +
Industry Position	POS_OP + POS_NET + POS_ROE +					POS_NET - POS_OP -

The table summarizes the characteristics of winner shares. They tend to start becoming undervalued as much as twelve months before the start of extreme performance, resulting in a low market-to-book ratio. There is a limited supply of winner shares evidenced by a low number of shares in issue. On top of this there is a great deal of disagreement in the market as to the prospects of these companies.

Winners' fundamentals seem to improve considerably as the extreme performance approaches, perhaps in a response to a consolidation of assets and operations. In particular, sales grow and become more profitable. Working capital management and general asset efficiency improves. All of this results in gradually increasing earnings growth. As the majority of the improvements have already been affected to the business, dividend payouts begin to increase, although they still remain below market

levels at the start of the extreme performance. In addition, despite the improvement in the fundamentals, these companies still appear weaker than other companies perhaps leading to the disagreement in the market and the poor earnings forecasts by analysts.

This is reiterated by the fact that although winners improve positionally in some fundamental variables as extreme performance approaches, in general they still remain below other companies in terms of position by the time the start of the performance arrives.

5.7.2 Loser Signals

Similar results are presented for loser companies. Once again Table 5.4. below presents the remaining significant loser signals after the elimination procedure of this chapter. The table below lists these variables for each test, as well as indicating whether losers are more likely to be larger or smaller than non- or pre-losers.

Table 5.9. Significant Variables after Adjustment for Perfect Correlation: Losers

The table below shows all variables which are included in the study for each of the six tests for loser signals run after adjustment for perfectly correlated and other related variables. These variables are derived in two stages. Firstly, those variables which are found to be significantly different among samples in terms of the median test (see Appendices C.2. and C.10. to C.14.) are included. Secondly, the list is reduced by removing those variables which are perfectly correlated to another more significant variable which is already included (see Table 5.7.). A comprehensive key explaining what each test title refers to can be found in Appendix C.4.

The variables under each test are ranked by the absolute value of the T-statistic from the median tests for differences between losers vs non-losers and losers vs losers *x* months before the start of extreme performance within each variable category. The first column under each test lists the significant variables. The second column indicates whether the loser portfolio is greater than or less than the respective non-loser or pre-loser portfolio.

	Loser Tests					
	L1	L2_1	L2_3	L2_6	L2_9	L2_12
Information variables				MAN_OWN -		
Valuation Measures	EY - MTB +					
Technical Indicators	AGE - MOM_24 - MOM_18 - MAXP_24 - MAXP_12 - MOM_12 - VOL_6 - VOL_12 -				VOL_12 - VOL_6 - SDEV_VOL -	MOM_6 + MOM_24 -
Fundamental Measures	SALESTCASH - CH_ARTSALES + CH_DPS - CH_TA + CH_DEP + EARNG_60 + CH_INV + WCTTA + CH_CAPGEAR + ROE + CH_INVTURN - EPS - DY - CH_ARISALES + INVTTA - CH_ASSTURN - CH_EBITSALES + GM - EARNG_24 - CH_SALES -			CH_ARISALES + EARNG_12 + CH_ASSTURN -	EARNG_12 + ACCTTA - CH_ARISALES + CH_TA + CH_DEP + INVTTA - SALESTCASH - WCTTA + CH_ASSTURN - CH_SALSALES + ROE + CH_DPS - CH_ARTSALES +	EARNG_12 + CH_SALSALES + CH_DEP + ACCTTA - CH_ARISALES + CH_DPS - CH_TA + WCTTA + ROE + CH_ARTSALES + SALESTCASH - INVTTA - CH_ASSTURN - CH_CAPGEAR + REVISION_12 -
Industry Position	POS_SALES - POS_ROE - POS_OP - RSTRENGTH_ALSI - WRSTRENGTH_ALSI -				POS_NET + WRSTRENGTH_ALSI +	POS_NET + POS_SALES +

The above table indicates the general characteristics of loser companies. Firstly, management divests themselves of their holding in the company six months before the extreme loss begins. Despite this, losers remain overvalued even at the start of the extreme loss.

Losers tend to be younger companies for which a slow down in performance has already begun, resulting in a lower demand for the shares of the company. The company experiences declining sales and profitability as well as decreasing asset efficiency. Losers seem to reduce dividends and take on additional debt in order to

increase the levels of assets held. Despite this, earnings decrease leading to a deceleration in earnings growth.

Their efforts do improve some fundamental variables in terms of position in the market. However, the improvement is not large enough as losers remain below most of the market in terms of these measures at the onset of their extreme loss.

-6-

Derivation of Winner Filter Rules

6.1 Introduction

In Chapter 5, 62 signal variables are found which are significantly different between extreme winners and non-winners as well as between extreme winners and the same shares before the start of their extreme performance (pre-winners). However, a useful trading strategy is one which does not require the collection of such an extensive amount of data in order to make a decision. In addition, knowing which variables are significant is not enough – it is necessary to derive filter rules which will allow for the easy extraction of potential extreme performers.

The aim of this chapter is to develop a methodology to tackle these two aforementioned problems:

(i) reduce the number of significant signals to a manageable amount

(ii) derive filter rules for each of these signals

This task is complicated by the large number of potential variables involved. An exhaustive search of every possible permutation of every combination of variables, with every permutation of filter values for each variable is unfeasible. With N possible variables and M possible filter levels for each, there are 2^{NM}-1 combinations. Such a procedure in this study would therefore require prohibitive computational time.

This chapter therefore proposes an alternative for achieving the two stated aims: a stepwise median comparison test. This procedure is based on a similar methodology to a stepwise regression. The method considers numerous filter levels for each variable and considers which one of all of these filters provides the return most significantly greater than a specified return. It keeps this best performing filter and filters the remaining shares at each filter level for every other variable. The most

significant filter is again added. This process continues until no additional filter can be significantly added.

One advantage of this procedure over methods used in previous studies is that it takes the magnitude of extreme performance into account and does not simply classify extreme performance as a binary event such as Glickman et al (2001). In addition, the use of the Wilcoxon Signed Ranks Test (which is a nonparametric method) implies that the assumption of normality in the data is not necessary.

However, this method is subject to some disadvantages that are inherent to all stepwise procedures (Hamilton, 1992). Firstly, when there are strong relationships between predictor variables, the program will exclude one or more of these variables which could lead to the mistaken conclusion that the variable in question is of no importance. Furthermore, if two variables are related and have an offsetting effect on the dependent variable one or both may be mistakenly excluded from the model.

Finally, Norton and Smith (1979) describe the results of stepwise procedures as optimal but not maximal – they result in solutions which may be local, but not necessarily global maxima. In order to find the global maximum all permutations of variables would have to be tested. This problem is addressed to some degree by repeatedly running the stepwise procedure, each time with slight adjustments to the parameters.

The remainder of the chapter continues as follows: Section 6.2 begins by deciding on filter points for each individual variable. Two methods are considered: deciles or an approach based on the medians of winner and non-winner portfolios. Section 6.3 then continues by designing a methodology for choosing and adding the best filters to a combination of filters.

As mentioned earlier, the chapter utilises a stepwise median comparison procedure and compares the returns on each filtered portfolio to a specified return or comparison level. Section 6.6 considers alternative methods for deriving this comparison level and contrasts the results of each. Section 6.7 chooses the best combination of filters after analyzing the results of the previous sections. This combination is then compared to a

less repetitive, simpler stepwise technique, the stepwise Sharpe maximisation procedure, in Section 6.8. Finally, Section 6.9 summarizes the chapter and draws conclusions.

6.2 Deriving filter points

It is computationally inefficient to loop through every possible value for every variable when attempting to decide which filter to add at every step in the procedure. Instead, it is possible to design a heuristic to identify those filter values which are most likely to be significant.

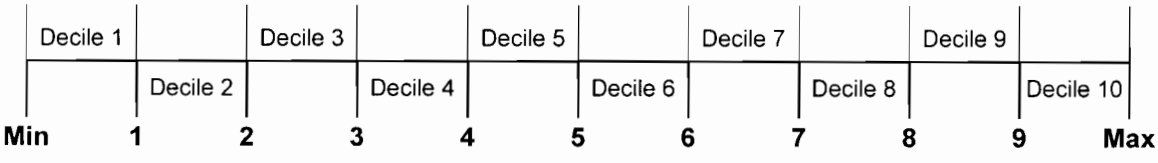
Two possible methods for deriving filter levels are considered:

(i) Decile levels

The first method breaks the distribution of the signal variable down into deciles. It then sets the filter levels equal to the cutoff value of each of these deciles. Each variable therefore has a minimum, a maximum and nine cutoff values, as illustrated in Figure 6.1 below. If values greater than a certain amount are filtered, the lower ten filter levels are used, whereas if values less than an amount are required the ten highest filter levels are used. These eleven filter levels for each variable are shown in Appendix D.1.

Figure 6.1. Illustration of decile cutoff points

The figure below shows that in order to divide the values of any variable into deciles it is necessary to know eleven cutoff values.



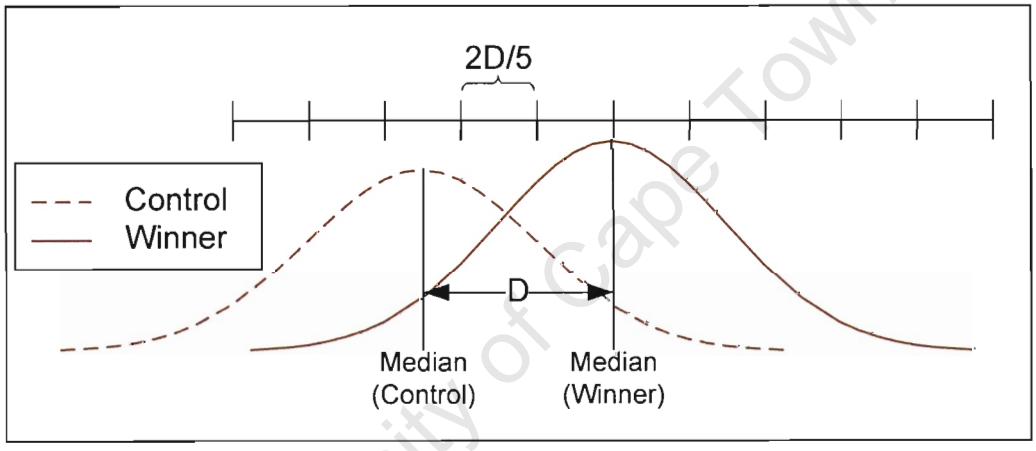
This method has the benefit that it takes all possible values of the variable into account. However, there is the possible disadvantage that the distances between the cutoff values are too large to pick up significant differences between the extreme and non-extreme performers.

(ii) Relative median levels

Since the aim of the strategy is to find the filter points that divide the data into extreme and non-extreme performers, it is useful to look at the distribution of each variable between these two groups. For example, the graph below compares the distributions of a hypothetical variable between the winner and control portfolios:

Figure 6.2. Comparison of winner and control portfolio distributions for a hypothetical variable

The figure below shows the distributions of the winner and control portfolios for a hypothetical variable. "D" is the distance between the medians of these two portfolios. The figure illustrates that filter points are set at 5 intervals, each (2D/5) units apart on either side of the winner median.



Chapter 5 identifies those variables which are distributed significantly differently between the relevant extreme performer and control portfolios. This chapter also shows that the medians of all variables are different between these two groups. It is therefore proposed to calculate the difference between the medians of the winner and control portfolios (D).

Using this amount, eleven filter values can be derived for each variable. These will each be (2 × D / 5) units further from the median than the previous filter value on either side of the median as in Figure 6.2. above. Each of the eleven filter levels for each variable derived by this method are shown in Appendix D.2.

This method has the advantage that it takes the previous findings into account and uses the significant differences between medians in the extreme and non-extreme

performing portfolios to derive the filter values. On the other hand, if differences between sample medians is relatively small, the filter values derived may cover a relatively small range.

The results of these two techniques are compared in Section 6.5 in order to decide which one will be used.

Finally, once filter points have been established, it is necessary to decide in which direction the filter should take place. This can once again be illustrated by considering Figure 6.2. In this hypothetical example, it is clear that the median value of the variable under consideration is greater in the winner portfolio than the non-winner portfolio. This would imply that an optimal filter rule incorporating that variable would isolate all values greater than some filter level. Therefore, if the winner portfolio is found to be greater than the control portfolio by the median test in Chapter 5, it can be assumed that extreme performance is likely to occur to the right of the filter point. The opposite is true if the winner portfolio is less than the control portfolio. This leads to the following filter direction rule:

(i) if Winner > Control: filter all shares > filter point

(ii) if Winner < Control: filter all shares < filter point

Similarly, the same logic can be applied to loser and non-loser portfolios:

(iii) if Loser > Control: filter all shares > filter point

(iv) if Loser < Control: filter all shares < filter point

Now that the methods for determining filter levels for each variable have been derived, it is necessary to decide how each of these filter levels will be evaluated.

6.3 Choosing and adding best filters

A number of different filter levels are derived for each variable in Section 6.2. This section approaches the problem of objectively deciding which of these filter levels out of all the possible variables is the best.

The process begins by looping through all filter values of all variables and testing at each stage whether the median return of the filtered shares (Y) is significantly greater than or less than a preset comparison level (CL). Section 6.6 discusses how these comparison levels are set. Ultimately, for winners this would be greater than 100 percent and for losers it would be less than negative 50 percent. The null and alternate hypotheses for a winner filter is therefore:

H_0: The median of Y is $\leq$ CL

H_1: The median of Y is > CL

In order to test this upper-tailed test, the Wilcoxon Signed Ranks Test is used. This test proceeds in the following steps (Conover, 1999 and Keller and Warrack, 2000):

(i) the difference (D_i) between each return observation (R_i) and the proposed median or comparison level (CL) is calculated:

$$D_i = CL - R_i \qquad (6.1)$$

(ii) A rank ($Rank_i$) is assigned to each D_i. Separate ranks are assigned for the group of observations where $D_i > 0$ and $D_i < 0$.

(iii) The test statistic (T^+) is the sum of the positive signed ranks:

$$T^+ = \sum (Rank_i \text{ where } D_i > 0) \qquad (6.2)$$

(iv) If n > 50, the normal approximation should be used. In this case, the test statistic is:

$$z = \frac{T^+ - E(T)}{\sigma_T} \qquad (6.3)$$

$$\text{where } E(T) = \frac{n(n+1)}{4} \qquad (6.4)$$

$$\sigma_T = \sqrt{\frac{n(n+1)(2n+1)}{24}} \qquad (6.5)$$

Which is compared to the standard normal distribution to determine its level of significance.

Once the z-statistics for all *i* variables at all of the *j* filter levels have been computed, the variable and filter level which maximizes z_{ij} is set as the starting filter. The process continues by searching the filter levels of the remaining variables to deduce which additional filter will once again maximize the total z-statistic. The z-statistic is

used as a measure of the strength of the filter for two reasons: (1) it takes the returns of included shares relative to the rest of the market into account by including the sum of the ranks of the portfolio – the higher the returns of the underlying shares, the greater the ranks; and (2) it adjusts these returns for variability by including the standard deviation of ranks.

The procedure is stopped when the filters applied are so stringent that no more observations can be excluded with any of the remaining filters.

6.4 Evaluation of filter combinations

In order to contrast and evaluate the results, some sort of evaluation measure is needed. In the context of extreme performance, an evaluation technique should take the following into account:

(i) the number of filters used – the greater the number of filters, the worse the filter combination as this makes the model more difficult to apply. Furthermore, too many variables may reduce the robustness of the model as it may be fitted to the idiosyncrasies in the insample data.

(ii) The number of shares picked – the more shares picked the better the filter combination. The greater the number of shares, the more statistically significant the derived models. In addition, a filter which chooses a large number of shares will allow an investor to achieve diversification. Furthermore, total return will be higher if more shares are held even if the individual returns on these shares are slightly lower.

(iii) The number of winners picked – since this paper focuses on predicting extreme performers, the greater the number of winners picked the better. However, this will implicitly be taken into account if an evaluation technique considers the number of observations chosen and the average return.

(iv) The average return – the higher the average return the better.

(v) The average portfolio standard deviation – the lower the better as this implies a lower level of risk. This is also expected to be related to the

number of companies as a greater holding of companies lead to better diversification of firm-specific risk.

The z-statistic from the Wilcoxon signed ranks test is obviously not ideal as it only takes the mean and standard deviation of ranks into account. Furthermore, it cannot be used to compare results derived with different comparison levels because as the comparison level increases, it is expected that the z-statistic should be biased downwards as the condition of the test becomes more stringent. Therefore two alternative evaluation techniques are suggested. Firstly, the Sharpe's measure divides average portfolio excess returns over the sample period by the standard deviation of returns over that period. It therefore measures the reward to volatility trade-off (Sharpe, 1966):

$$\frac{\bar{r}_p - \bar{r}_f}{\sigma_p} \qquad (6.6)$$

where $\bar{r}_p$ is the average return on the portfolio

$\bar{r}_f$ is the risk-free rate

σ_p is the standard deviation of the portfolio

The three-month NCD rate is used as it is the best proxy for the risk-free rate in a South African context in terms of Firer and Mcleod (1999). The problem with this ratio is that it does not explicitly take the number of observations chosen into account although this will be taken into account indirectly through the standard deviation. It also does not take the number of filters used into account.

The second measure, the JK statistic overcomes these issues by explicitly taking returns, standard deviations, number of shares and number of filters into account:

$$JK = \frac{\left(1+\frac{\mathrm{n}}{\mathrm{N}}\right)\times \bar{r}_p^{-2}}{\sigma_p^2 \times \left(1+\frac{f}{F}\right)} \times \frac{\bar{r}_p}{|\bar{r}_p|} \qquad (6.7)$$

where n is the number of observation filtered

N is the total number of observations in the sample

$\bar{r}_p$ is the average return on the portfolio

f is the number of filters used

F is the total number of significant filters available

σ_p is the standard deviation of the portfolio

The statistic is maximized when the number of observations chosen as a proportion of the total number of observations in the sample increases, when the average return on the portfolio increases, when the standard deviation of the portfolio decreases and when the number of filters used as a proportion of the total number of filters available decreases. The last term ensures that the JK statistic is negative if the overall portfolio return is negative. This is necessary for the evaluation of loser filters in Chapter 7.

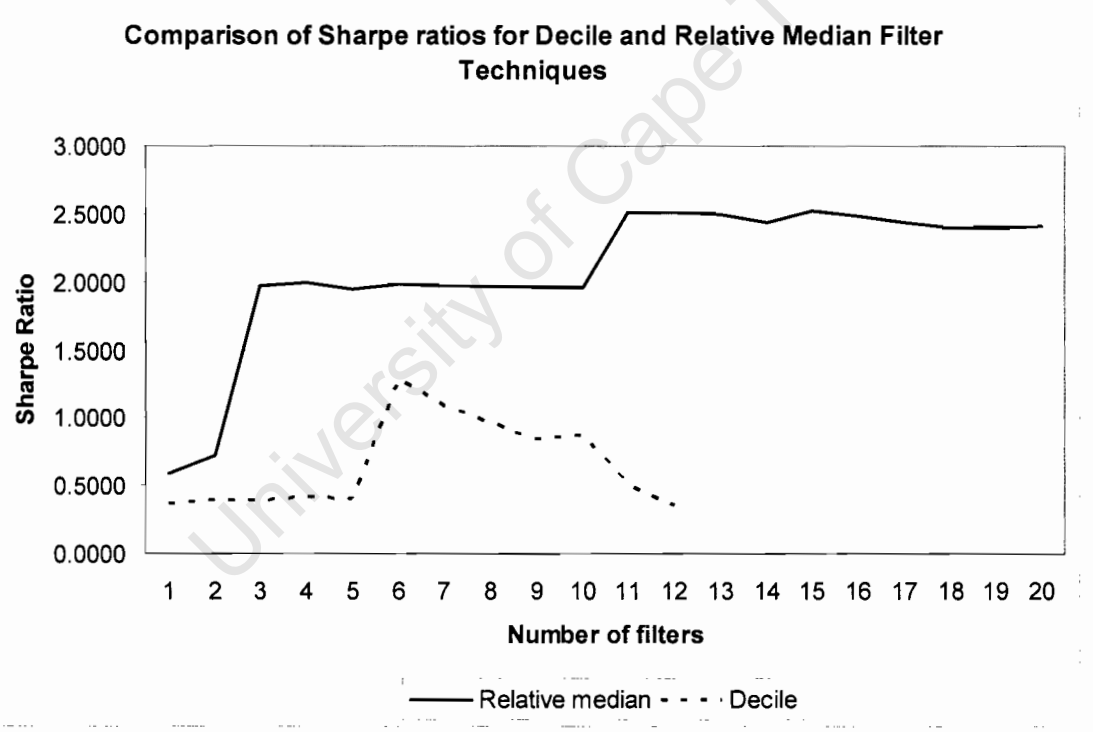
Since the z-statistic is inferior to the Sharpe ratio and the JK statistic in terms of evaluation, the question arises: why is the stepwise procedure conducted to maximize the z-statistic of the Wilcoxon signed ranks test and not the Sharpe measure? The advantage of the Wilcoxon test is that the comparison level of the test can be easily adjusted (discussed in detail in Section 6.6). By doing so, numerous different combinations of filters are produced, which can then be evaluated to determine the best solution. On the other hand, no parameters of the Sharpe measure can be adjusted, implying that the stepwise procedure will result in the same filter combination every time. The latter method is therefore more susceptible to one of the major pitfalls of stepwise procedures: that it may result in an optimal, nut not maximal, solution. Despite this obvious disadvantage, the results of the two procedures are contrasted in Section 6.8.

6.5 Choice of filter level technique

Using the basic framework for stepwise median comparison test, and the Sharpe measure as an evaluation tool, the results from this procedure can be compared when using the decile and relative median filters of Section 6.2. The comparison level is initially set at 40 percent for both of these tests. Appendix D.3. shows the results. Figure 6.3 below plots the Sharpe ratios of each of these techniques below:

Figure 6.3. Comparison of decile and relative median filter techniques

The figure below shows the Sharpe ratios of each of the two filter level techniques discussed in Section 6.2 when applied to the median comparison test with a comparison level of 40 percent. The graph shows the Sharpe measures for the decile and relative median filrer techniques as the number of individual filters included increases. The graph is based on the results presented in Appendix D.3.

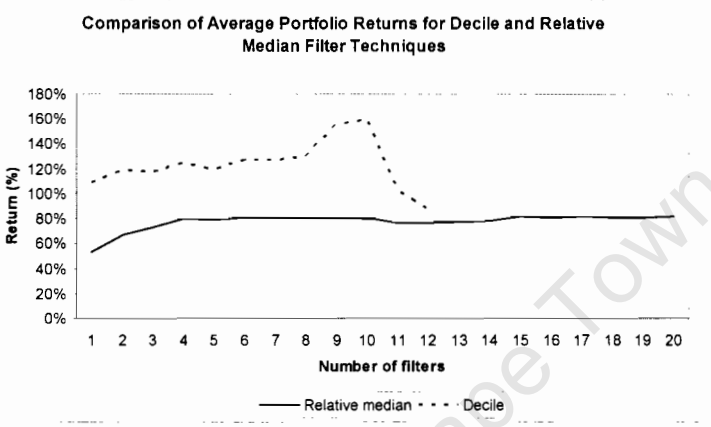


The graph clearly shows that the Sharpe ratios under the relative median technique are always significantly higher than under the decile technique. This higher Sharpe ratios are explained by consistently lower portfolio standard deviations (Panel C of Figure 6.4) and a consistently greater number of companies picked (Panel B of Figure 6.4). These two factors outweigh the drawback that the relative median portfolios tend to earn lower returns (Panel A of Figure 6.4).

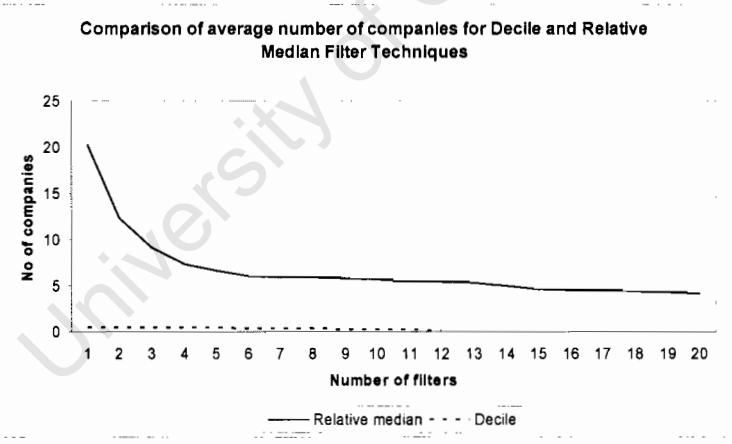
Figure 6.4. Comparison of decile and relative median filter techniques features

The figure below compares the mean portfolio returns (Panel A), average number of holdings included by each filter in each month (Panel B) and the portfolio standard deviations (Panel C) between filters derived under the relative median and decile techniques as the number of filters is increased. These features help to explain the higher Sharpe ratios achieved under the relative median technique as illustrated in Figure 6.3. The data relates to the period from January 1995 until December 2004 and are based on the results in Appendix D.3.

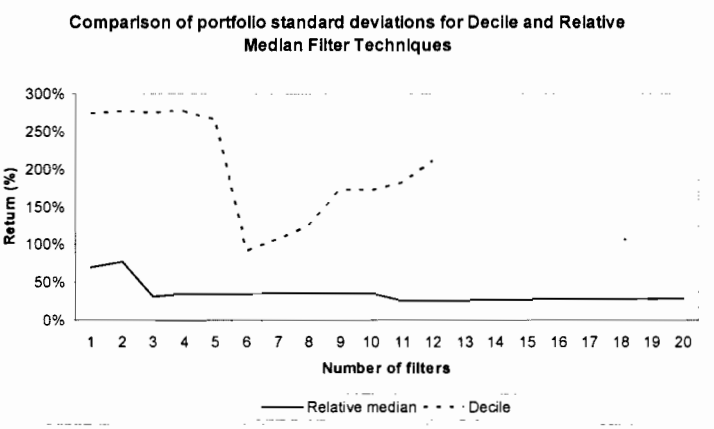
Panel A: Mean portfolio returns



Panel B: Average number of holdings per month



Panel C: Annualized standard deviation of monthly portfolio returns



As the relative median technique clearly outperforms the decile technique, the former will be applied in the remainder of this study.

6.6 Defining the comparison levels

The previous sections outline methodologies not only for determining which filter levels to test, but also how to evaluate each of these filter levels in order to decide which filter to include in a model. However, up until this point the comparison level against which the medians are tested by the Wilcoxon signed ranks test has not been considered.

Ideally, based on the definitions chosen for an extreme winners and losers, a comparison level of 100 percent for winners and -50 percent for losers should be used. However, when these comparison levels are applied no entering filter can be identified as this criteria is too stringent to find even one significant filter level. It is therefore necessary to start with a lower comparison level in order that the process identifies filters to be added to the model.

Two possible methods therefore result. Firstly, the comparison level can be set at a fixed amount (e.g. 50 percent) for every filter added. This is termed a "static" comparison level. Alternatively the comparison level can initially be set low but gradually be increased to 100 percent for winners (or decreased gradually to -50 percent for losers) as additional filters are added to the model. This is termed a "dynamic" comparison level.

This section continues by applying both of these techniques. A number of combinations of comparison levels are tested under both techniques and the results are considered.

6.6.1 Static comparison level

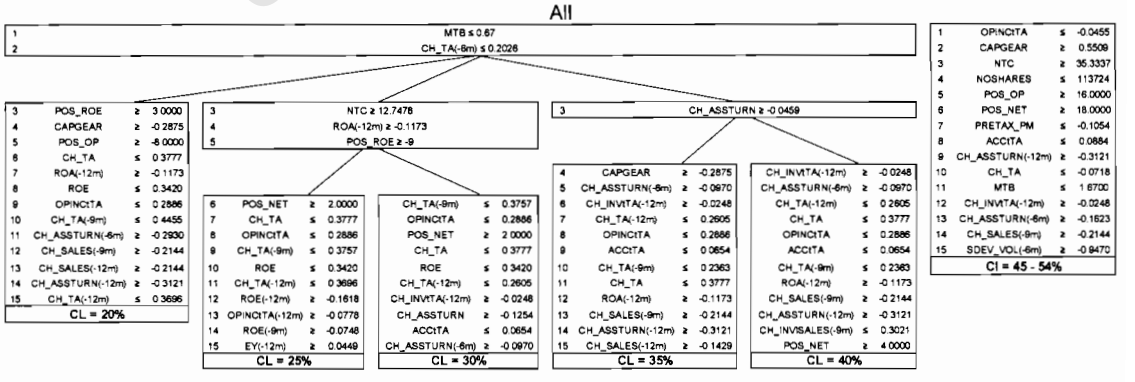
As mentioned earlier, a comparison level of 100 percent for winners does not yield results as the condition is too stringent and hence no initial filter can be chosen. In fact, this is the case for all comparison levels above 54 percent. The optimal static comparison level would therefore be somewhere between 0 and 54 percent.

Since there is no ex-ante method for determining which comparison level is the best, numerous different levels are tested. In particular, eleven different comparison levels are considered (20, 25, 30, 35, 40, 45, 50, 51, 52, 53 and 54 percent). The results from these tests are presented in Appendix D.4.

By analyzing these results it is evident that there are only two possible initial entering filter variables: market-to-book value (MTB) and operating income to total assets (OPINCtTA). The results can therefore be divided into two groups on the basis of their initial entering filter. Figure 6.5 below summarizes these results.

Figure 6.5. Summary of results for median comparison test

The figure below shows the first 15 filters derived by the stepwise median comparison procedure with static comparison levels ranging from 20 percent to 54 percent. The tests are run on the full insample from January 1995 until December 2004. The figure shows not only the filtering variable at each stage but also the filter value and direction. The bottom block in each column indicates the comparison level. The same set of filter combinations is obtained for all comparison levels from 45 to 54 percent. The figure is derived from the results presented in Appendix D.4.



As can be seen from the figure above, all comparison levels up to and including 40 percent have the same first two filters. Thereafter, the subsequent filter splits the

results into three unique filter combinations: for a comparison level of 20 percent, 25 percent to 30 percent and 35 percent to 40 percent. Each of the last two of these is later further split into two possible combinations.

It is also evident from this figure that all six comparison levels of 45 percent and 50 percent until 54 percent in increments of 1 percent yield identical results. The results therefore show that of the eleven static comparison levels considered, only six unique combinations of filters are created. This amount may be even less if fewer filters are required for each combination.

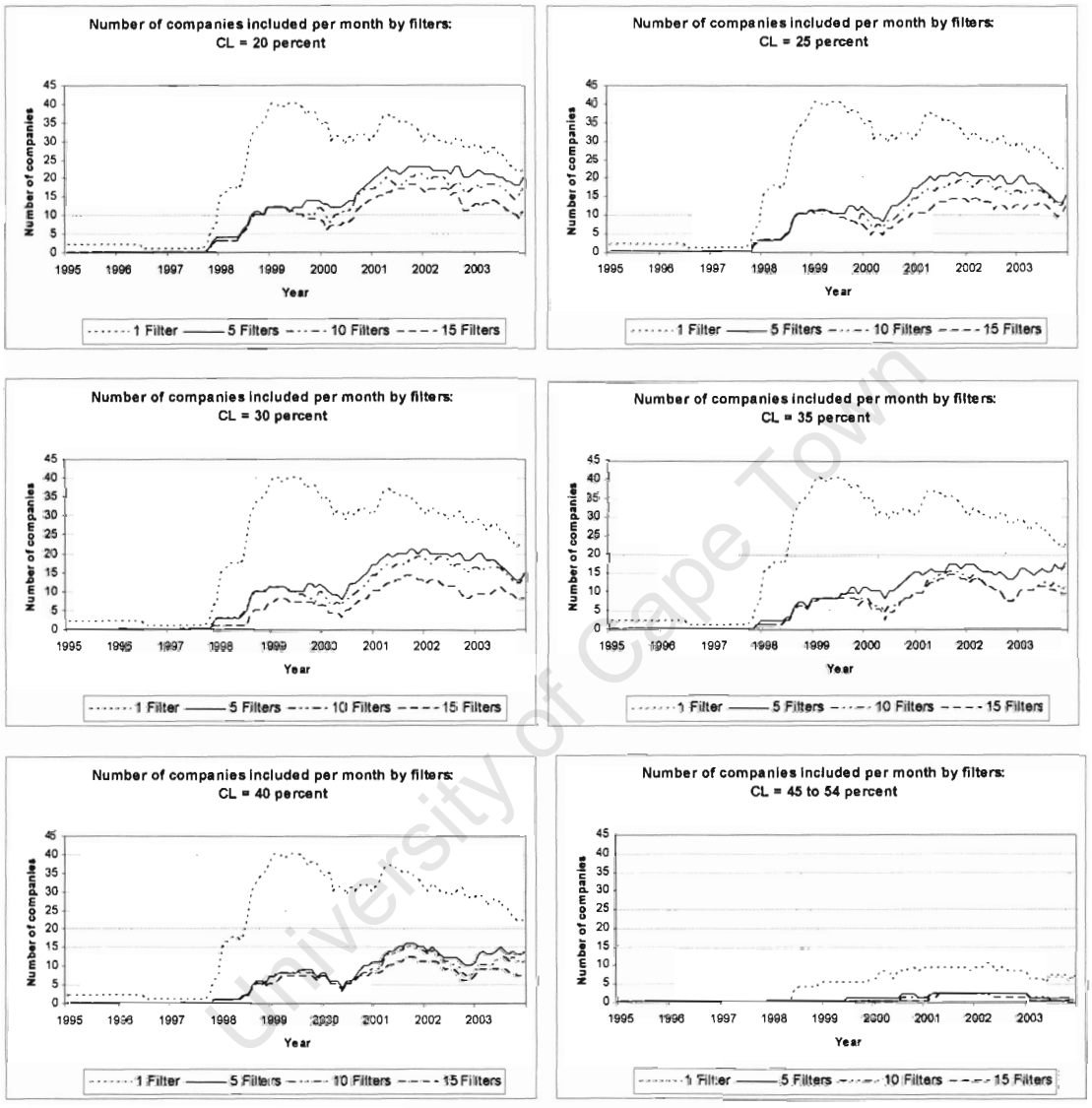
Appendix D.5. shows another interesting aspect of the results. This appendix shows the calendar time payoffs for each combination of filters under each static comparison level. The calendar time payoff is simply the average return earned in each year of the sample (from 1995 until 2004) by each of the filtered portfolios. This helps to give an idea of the variability of the returns over time and also whether the majority of the returns are earned in a particular period.

In addition to the average return earned by each filter combination in each year, Appendix D.5. also breaks this average down into two components. Firstly, the total return earned in each year is the sum of the individual returns of the included shares. Secondly, the number of company months in each year is the sum of the months for which each share is held in each year. The average return which is the quotient of these two values is therefore an equally-weighted return of all the shares in the filtered portfolio. Each calendar time payoff in this appendix relates to the filter combination with the corresponding comparison level and number of filters in Appendix D.4.

An interesting observation is evident from considering the pattern of returns over time. Figure 6.6 below graphs the number of companies included in each month of the sample obtained under each of six unique filter combinations when one, five, ten and fifteen filters are included.

Figure 6.6. Average number of companies per month in each sample year

The graphs below show the average number of companies included per month in each year of the sample (from 1995 until 2004) when one, five, ten and fifteen filters are included under each of the six unique filter combinations identified earlier in this chapter. The graphs are based on the calendar time payoffs presented in Appendix D.5.



It is evident from these graphs that the filters are severely biased towards picking observations later in the sample. This problem is exacerbated as the number of filters and the comparison levels are increased. The reason for this is that the program picks filter variables for which there is little data early in the sample and hence excludes these observations. This means that the filters might only be included due to their ability exclude a large number of companies, rather than for some economic quality inherent to extreme performers.

There are two possible solutions for this problem: either only those variables for which there is a large amount of data over the entire sample should be considered or the sample itself should be restricted to the later years of the sample.

6.6.1.1 Reduced variables

In each year of the test sample there could be a maximum of 1284 observations for each variable (107 companies for 12 months). By considering Appendix D.6. it is evident that most variables have substantially less observations than this, especially in the earlier years of the sample. Table 6.1 below shows those variables which have at least half of this maximum observations (642 observations) in each sample year. It is evident from this table that the remaining variables are quite similar, and mostly indicate past characteristics of the companies.

Table 6.1. Variables with many observations

The table shows those variables which are found to be significant signals in Chapter 5 and which have at least 642 observations (half of the maximum number of observations) in every year of the sample from 1995 until 2004.

NOSHARES
DY
MOM_6(-3m)
MOM_3(-6m)
MOM_6(-6m)
EY(-9m)
MOM_3(-9m)
DY(-9m)
EY(-12m)
DY(-12m)

The results from repeating the stepwise median comparison procedure with only these variables can be found in Appendix D.7. The corresponding calendar time payoffs can be found in Appendix D.8. As is evident from this appendix, five unique combinations of filters are derived as shown in Figure 6.7 below. Furthermore, any comparison level above 40 percent is too stringent to induce an initial entering variable.

Figure 6.7. Summary of results for median comparison test: reduced variables

The tables below show the two unique combinations of filters derived from the stepwise median comparison test when only those variables for which have at least 642 observations per sample year are considered. The tables show not only the filtering variable at each stage but also the filter value and direction. The last column of each combination indicates the Sharpe ratio for the corresponding filter combination. The bottom block in each column indicates the comparison level. The highlighted row indicates the filter which maximises the Sharpe ratio.

1	EY(-9m)	≥	0.1346	1.09
2	MOM_3(-9m)	≥	-0.2761	1.23
3	EY(-12m)	≥	0.0449	1.23
4	MOM_3(-6m)	≥	-0.2988	1.27
5	MOM_6(-3m)	≥	-0.1964	1.53
6	MOM_6(-6m)	≥	-0.3419	1.57
7	DY(-12m)	≥	-0.0079	1.53
8	DY(-9m)	≥	-0.0122	1.53
9	NOSHARES	≤	148056	1.54
10	DY	≤	0.047	0.89
	CL = 20%			

1	EY(-9m)	≥	0.1533	1.07
2	EY(-12m)	≥	0.1493	1.16
3	NOSHARES	≤	148056	1.12
4	MOM_6(-3m)	≥	-0.1964	1.20
5	MOM_6(-6m)	≥	-0.1785	1.53
6	MOM_3(-9m)	≥	-0.2131	1.58
7	MOM_3(-6m)	≥	-0.2988	1.55
8	DY(-9m)	≥	0.0369	1.61
9	DY(-12m)	≥	0.0299	1.60
10	DY	≤	0.047	1.65
	CL = 25%			

1	EY(-9m) ≥ 0.1720			1.34
2	MOM_3(-9m) ≥ -0.0242			1.33
3	MOM_3(-6m)	≥	-0.2988	1.46
4	NOSHARES	≤	148056	1.40
5	EY(-12m)	≥	0.1232	1.28
6	MOM_6(-3m)	≥	-0.1438	1.29
7	MOM_6(-6m)	≥	-0.1785	1.30
8	DY(-9m)	≥	0.0018	1.70
9	DY(-12m)	≥	0.0299	1.68
10	DY	≤	0.047	1.68
	CL = 30%			

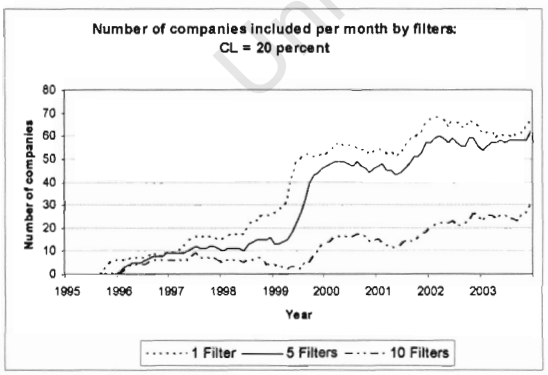
3	NOSHARES	≤	148056	1.26
4	MOM_3(-6m)	≥	-0.2988	1.40
5	MOM_6(-3m)	≥	-0.1438	1.48
6	EY(-12m)	≥	0.1232	1.29
7	MOM_6(-6m)	≥	-0.1785	1.30
8	DY(-9m)	≥	0.0018	1.70
9	DY(-12m)	≥	0.0299	1.68
10	DY	≤	0.047	1.68
	CL = 35%			

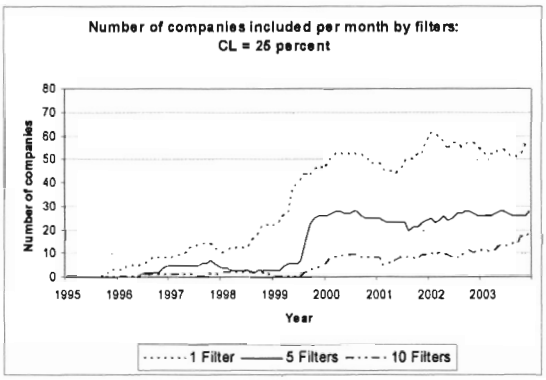
1	EY(-12m)	≥	0.2015	1.30
2	NOSHARES	≤	81392	1.30
3	DY	≤	0.0036	1.52
4	EY(-9m)	≥	0.1533	1.66
5	MOM_6(-6m)	≥	-0.3419	1.89
6	MOM_3(-9m)	≥	-0.2761	1.90
7	DY(-9m)	≥	-0.0122	1.89
8	DY(-12m)	≥	-0.0079	2.93
	CL = 40%			

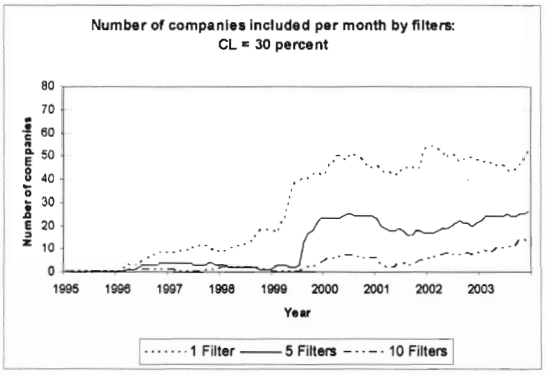
The calendar time payoffs as illustrated in Figure 6.8 below, show that the number of observations are still biased towards later particular period. This effect is particularly large when additional filters or added or the static comparison level is increased. This, together with the fact that the reduced list of variables is not ideal and do not give a large enough perspective on companies in question makes this method inappropriate for the study.

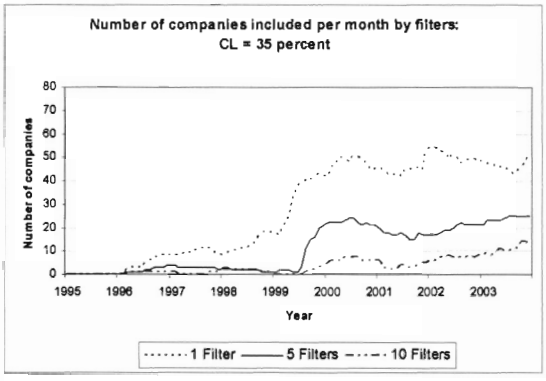
Figure 6.8. Number of filtered company months in each sample year: reduced variables

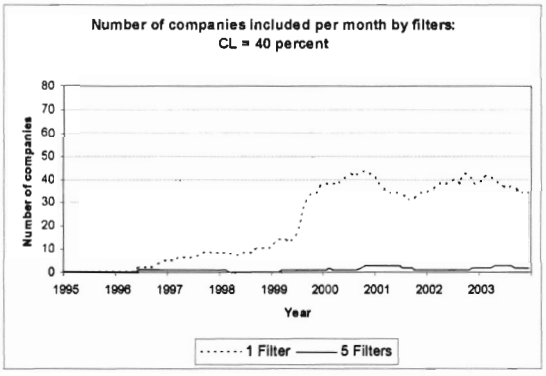
The graphs below show the number of companies included in each month of the sample over the period from 1995 until 2004 when one, five and ten filters are included under each of the five unique filter combinations derived by the median comparison test above. The graphs are based on the calendar time payoffs in Appendix D.8.











6.6.1.2 Restricted sample period

The alternative to reducing the number of variables considered is to restrict the sample period so that many observations are available for all variables. This method has the advantage that it still takes all relevant signals into account and may not exclude a potentially vital signal simply on the basis of a lack of early observations. On the other hand, the disadvantage is that it does not consider the full sample period and hence the robustness of the results may suffer. The severity of this problem can be evaluated when the results are tested on an independent sample, however.

By reconsidering Appendix D.4. it is evident that the filters tend to exclude observations in the first five years of the sample (1995 until 1999). This corresponds with Appendix D.6. which shows that most variables have a substantial number of observations from 2000 onwards. Therefore this section restricts the sample to the five years from January 2000 until December 2004.

Appendix D.9. shows the results for the stepwise median comparison procedure along with the corresponding calendar time payoffs. Figure 6.9 below summarizes the unique filter combinations derived from these tests.

Figure 6.9. Summary of results for median comparison test: restricted sample period

The tables below show the seven unique combinations of filters derived from the stepwise median comparison test when the sample is restricted to the years from 2000 until 2004. The tables show not only the filtering variable at each stage but also the filter value and direction. The last column of each combination indicates the Sharpe ratio for the corresponding filter combination. The bottom block in each column indicates the comparison level. The highlighted row indicates the filter which maximises the Sharpe ratio.

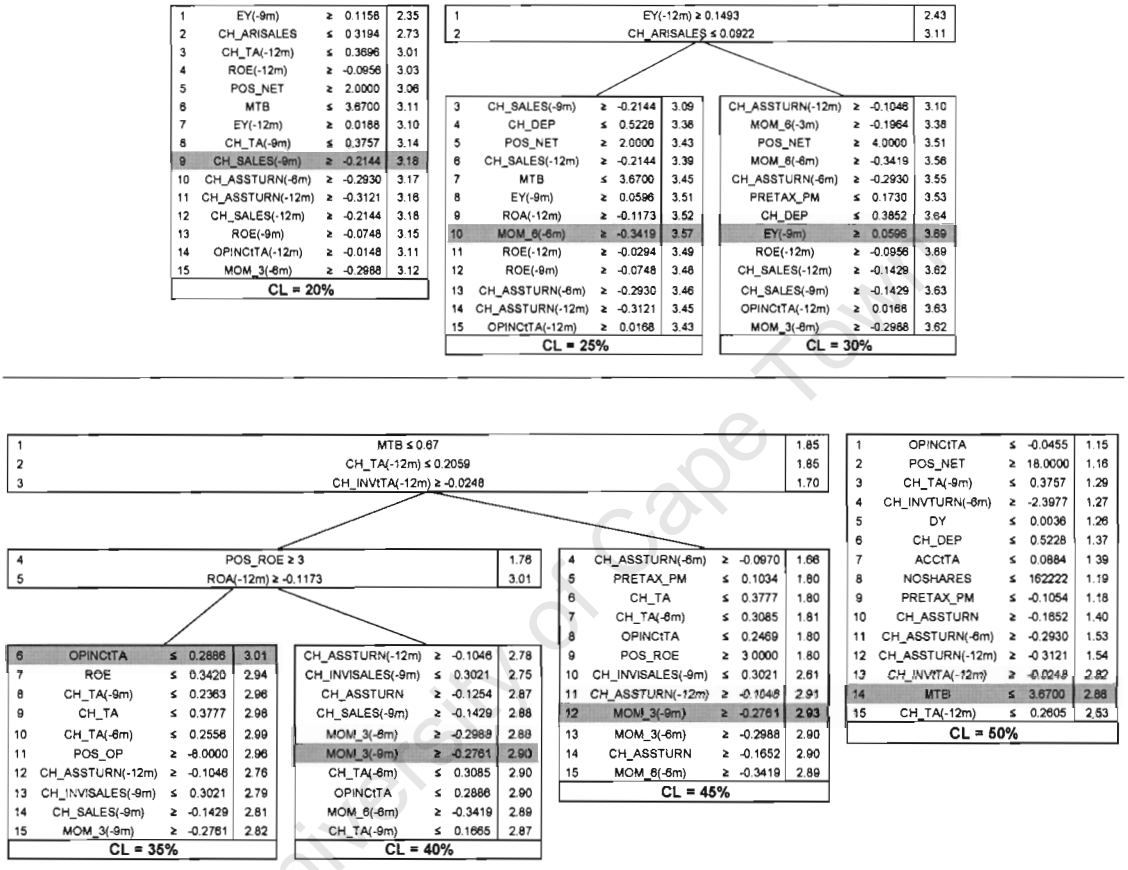
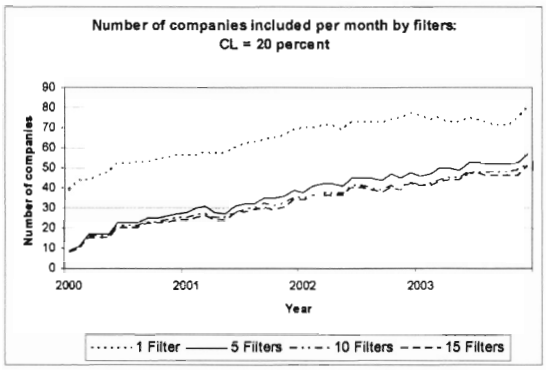
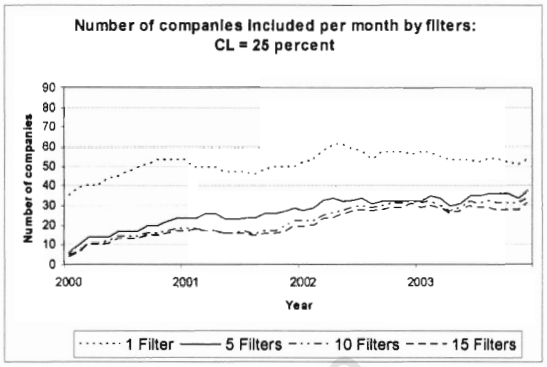


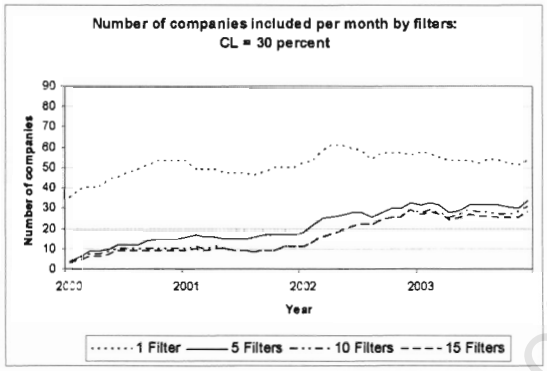
Figure 6.10 below shows that the problem of a severe lack of observations in any particular period has been overcome by only considering the last five years of the sample. It is once again evident from the below graphs that the number of observations decreases significantly both as additional filters are added and as the comparison level is increased.

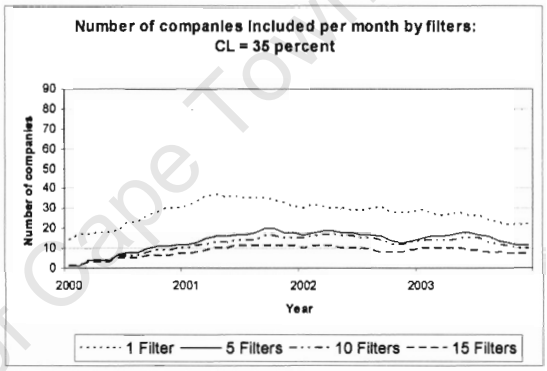
Figure 6.10. Number of filtered company months in each sample year: restricted sample

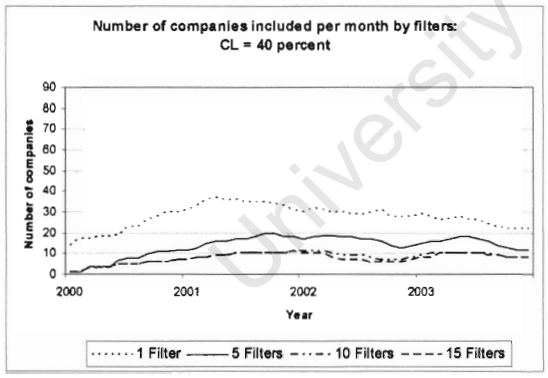
The graphs below show the number of companies included in each month of the sample from 2000 until 2004 when one, five, ten and fifteen filters are included under each of the seven unique filter combinations derived by the median comparison test above. The graphs are based on the calendar time payoffs in Appendix D.9.

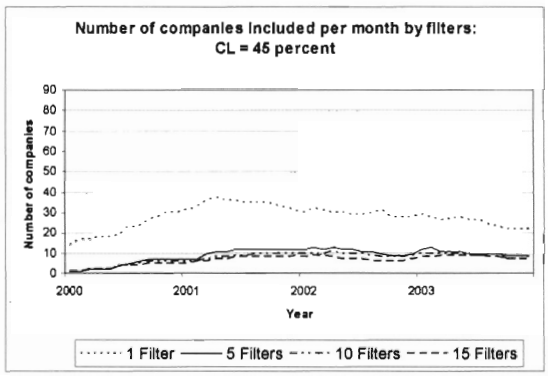


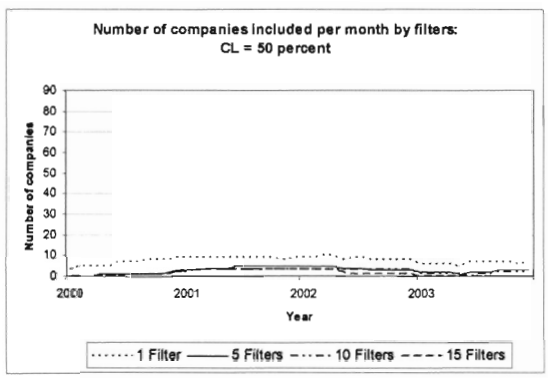












By examining the first few filters in each of the combinations in Figure 6.9, it is evident that the types of filters which are picked are often similar. These results can be summarized by considering their variable categories:

(i) Valuation — The filters pick stocks with low market-to-book (MTB) ratios showing that they focus on undervalued shares. Past earnings yield (EY) also appears as important in filtering shares which have displayed this characteristic in the past as well.

(ii) Technical — The only current technical measure which is chosen is number of shares (NOSHARES). However, this signal only appears once and enters the combination as the eighth filter. Past technical measures seem even less important, with past six and three month momentum (MOM) entering the combinations as the tenth filters.

(iii) Fundamental:

Profitability — The most important measure of current profitability appears to be operating income to total assets (OPINCtTA) while the most important measure of past profitability is the past change in sales (CH_SALES).

Performance — Some of the combinations rely on return on equity (ROE) or dividend yield (DY) as filters of current performance. Similarly, past performance is separated through past return on equity (ROE) and assets (ROA).

Leverage — No leverage measures are chosen.

Liquidity — Both current and past measures of liquidity do not appear to be important.

Efficiency — A number of efficiency measures repeatedly appear in the above filter combinations. Current accounts receivable efficiency, measured by the change in accounts receivable less sales appears (CH_ARlSALES). Current overall asset efficiency appears to be more important, however, with

change in asset turnover (CH_ASSTURN) and change in total assets (CH_TA) appearing frequently. Past asset efficiency, measured through similar variables also appears numerous times as does past inventory turnovers.

(iv) Industry position — Measures of current industry position in terms of both margins and returns on equity are chosen relatively frequently.

6.6.2 Dynamic comparison level

Up until this point, the comparison level used in the Wilcoxon signed ranks test has been fixed at a particular level. However, as is evident from above the analysis, as this comparison level is set too high it becomes very difficult to find an initial entering filter and the number of observations is severely restricted. On the other hand, if this level is set too low, the procedure might not be able to significantly distinguish extreme winners from non-winners.

This section therefore takes a different approach to this problem. The initial comparison level is set at a low amount so that initial entering filters can be identified. However, this comparison level is increased gradually towards 100 percent as additional filters are included in order to make the criteria for the addition of extra filters more stringent and hence more effectively isolate extreme performers.

The same issue which is inherent to the static comparison level tests is also present in these tests: there is no ex-ante way of knowing what the initial comparison level should be. Once again, trial and error of numerous combinations is the only solution. Furthermore, it is now also impossible to know how fast the comparison level should be increased. In order to solve this problem the past literature can be considered.

Reinganum (1988) identifies nine filters necessary for isolating extreme winners. O'Neil (2002) has seven categories of variables containing about thirteen filters. Glickman et al (2001) identifies seven different filters for winners and losers. Finally,

Dong et al (2003) identify five winner filters. It is therefore evident that there is no set number of filters which works best. Therefore, the dynamic comparison levels will increase towards unity either within five, ten or fifteen variables.

Since the Section 6.6.1 found that reducing the number of variables is ineffective in removing the bias in observations towards later periods, this section only tests a variety of combinations of dynamic comparison levels on a restricted sample from 2000 until 2004 while taking all variables into account. Appendix D.10. presents the full set of results for these tests along with their calendar time payoffs.

Figure 6.11 below summarizes the results for these tests. This figure shows the first fifteen filters derived under starting comparison levels ranging from 20 to 50 percent under three scenarios: when the comparison level increases to unity gradually after five, ten and fifteen filters.

Figure 6.11. Summary of results for median comparison test: restricted sample period

The tables below show the unique combinations of filters derived from the stepwise median comparison test when the sample is restricted to the years from 2000 until 2004. Each panel of the figure shows the derived figures for a different starting comparison level ranging from 20 to 50 percent in increments of 5 percent. Furthermore, results are shown for each starting level when this level is increased to 100 percent in a length of five, ten or fifteen filters. The tables show not only the filtering variable at each stage but also the filter value and direction. The last column of each combination indicates the Sharpe ratio for the corresponding filter combination. The highlighted row indicates the filter which maximises the Sharpe ratio.

Panel A: Initial comparison level = 20 percent

1	EY(-9m) ≥ 0.1158			2.35
2	CH_ARISALES ≤ 0.0922			3.17

3	CH_TA(-12m) ≤ 0.0968			3.50

3	CH_INVtTA(-12m)	≥	-0.0248	2.98

4	POS_NET	≥	20.0000	2.90
5	GM	≥	-0.0822	3.14
6	DY(-12m)	≥	0.0536	3.33
7	POS_ROE	≥	23.0000	3.43
8	MOM_3(-9m)	≥	-0.1501	3.71
9	MOM_6(-3m)	≥	-0.0912	3.94
10	MTB	≤	1.1700	3.85
11	MOM_3(-6m)	≥	-0.0962	3.68
12	NOSHARES	≤	65226	3.34
13	DY(-9m)	≥	0.0509	3.53
14	CH_TA(-9m)	≤	0.0968	3.42
15	DY	≤	0.0422	3.61
Length = 5				

4	EARNG_12	≥	0.0248	4.31
5	CH_EBTtSALES(-12m)	≥	-0.7558	4.55
6	POS_OP	≥	8.0000	4.46
7	ROA(-12m)	≥	0.0651	4.71
8	CH_TA	≤	0.3777	4.93
9	PRETAX_PM	≤	0.1034	3.84
10	MOM_6(-3m)	≥	-0.0386	3.99
11	ROE	≤	0.2556	4.91
12	MTB	≤	2.1700	4.82
13	MOM_6(-6m)	≥	0.0666	4.81
14	MOM_3(-6m)	≥	-0.0962	4.73
15	MOM_3(-9m)	≥	-0.1501	4.72
Length = 10				

4	EARNG_12	≥	0.0248	3.96
5	EY(-12m)	≥	0.1232	4.11
6	NOSHARES	≤	178388	3.72
7	NTC	≥	24.0407	3.69
8	CH_EBTtSALES(-12m)	≥	-0.4681	3.85
9	CH_TA(-12m)	≤	0.1513	4.20
10	POS_OP	≥	12.0000	3.34
11	MOM_6(-3m)	≥	-0.1438	3.57
12	CH_INVtTA	≥	-0.0083	3.83
13	CH_TA(-9m)	≤	0.2363	3.82
14	CH_DPS(-12m)	≥	-0.5693	3.75
15	POS_ROE	≥	15.0000	3.86
Length = 15				

Panel B: Initial comparison level = 25 percent

1	EY(-12m) ≥ 0.1493			2.43
2	CH_ARISALES ≤ 0.0922			3.11
3	CH_ASSTURN(-12m) ≥ -0.1046			3.10

4	CH_EBTtSALES(-12m)	≥	0.2504	1.79
5	NOSHARES	≤	146056	4.11
6	PRETAX_PM	≤	0.1034	4.08
7	CH_ASSTURN(-6m)	≥	-0.0970	4.27
8	ROE	≤	0.3420	4.34
9	OPINCtTA	≤	0.1633	4.92
10	CH_DEP	≤	0.2475	4.84
11	MOM_3(-6m)	≥	-0.0962	4.95
12	MOM_6(-3m)	≥	-0.0912	4.93
13	MOM_6(-6m)	≥	-0.0151	5.13
14	EY(-9m)	≥	0.1720	5.05
15	MTB	≤	3.1700	4.97
	Length = 5			

4	EARNG_12	≥	0.0315	3.70
5	OPINCtTA(-12m)	≥	0.0483	3.76
6	POS_OP	≥	8.0000	3.86
7	ROA(-12m)	≥	0.0659	3.10
8	CH_DEP	≤	0.3852	3.63
9	MOM_6(-3m)	≥	-0.0386	3.77
10	PRETAX_PM	≤	0.1034	3.82
11	ROE	≤	0.2556	4.09
12	MOM_6(-6m)	≥	0.0666	4.16
13	MOM_3(-6m)	≥	0.0388	4.12
14	MOM_3(-9m)	≥	-0.1501	4.10
15	EARNG_24(-9m)	≥	-0.0858	4.01
	Length = 10			

4	NOSHARES	≤	146056	3.17
5	CH_DEP	≤	0.3852	3.53
6	PRETAX_PM	≤	0.1730	3.59
7	CH_INVtTA	≥	-0.0083	3.50
8	CH_TA(-9m)	≤	0.3757	3.58
9	MOM_6(-6m)	≥	-0.1785	3.60
10	CH_EBTtSALES(-12m)	≥	-0.6120	3.56
11	POS_NET	≥	20.0000	3.13
12	CH_DEP(-12m)	≤	0.3075	3.23
13	ROE(-9m)	≥	-0.0748	3.24
14	MOM_3(-9m)	≥	-0.0872	3.64
15	CH_INVTURN(-12m)	≥	-0.7389	3.69
	Length = 15			

Panel C: Initial comparison level = 30 percent

1	EY(-12m) ≥ 0.1493			2.43
2	CH_ARISALES ≤ 0.0922			3.11

3	EARNG_24(-9m)	≥	0.1821	3.62
4	CH_EBTtSALES(-12m)	≥	-0.7558	3.98
5	POS_ROE	≥	11.0000	3.79
6	CH_DEP	≤	0.1099	4.51
7	ACCtTA	≤	0.0654	5.31
8	MTB	≤	2.1700	5.45
9	MOM_3(-6m)	≥	-0.0287	5.52
10	MOM_6(-6m)	≥	-0.1785	5.50
11	NOSHARES	≤	146056	5.30
12	POS_NET	≥	14.0000	5.31
13	EARNG_24(-12m)	≥	-0.1674	5.23
14	MOM_3(-9m)	≥	-0.0872	5.48
15	CH_DPS(-9m)	≥	0.4048	5.30
	Length = 5			

3	CH_ASSTURN(-12m) ≥ -0.1046			3.10
4	EARNG_12 ≥ 0.0315			3.70

5	CH_EBTtSALES(-12m)	≥	-0.3246	3.31
6	CH_DEP	≤	0.3852	3.81
7	POS_OP	≥	8.0000	3.89
8	PRETAX_PM	≤	0.1034	3.98
9	MOM_6(-3m)	≥	0.0666	4.12
10	CH_ASSTURN(-6m)	≥	-0.0970	4.23
11	CH_QUICK	≤	0.0110	4.48
12	ROE	≤	0.3420	4.49
13	MTB	≤	2.17	4.15
14	CH_TA	≤	0.1530	4.82
15	MOM_3(-9m)	≥	-0.1501	4.82
	Length = 10			

5	ROA(-12m)	≥	-0.0074	3.30
6	PRETAX_PM	≤	0.1730	3.34
7	OPINCtTA(-12m)	≥	0.0483	3.43
8	CH_DEP	≤	0.3852	4.10
9	POS_OP	≥	8.0000	4.01
10	ROE(-9m)	≥	0.1204	4.04
11	ROE(-12m)	≥	0.1030	4.00
12	EARNG_24(-12m)	≥	0.0333	4.16
13	MTB	≤	2.17	4.28
14	POS_ROE	≥	3.0000	4.29
15	CH_ASSTURN(-6m)	≥	-0.0970	4.34
	Length = 15			

Panel D: Initial comparison level = 35 percent

1	MTB ≤ 0.67			1.85
2	CH_TA(-12m) ≤ 0.2059			1.85

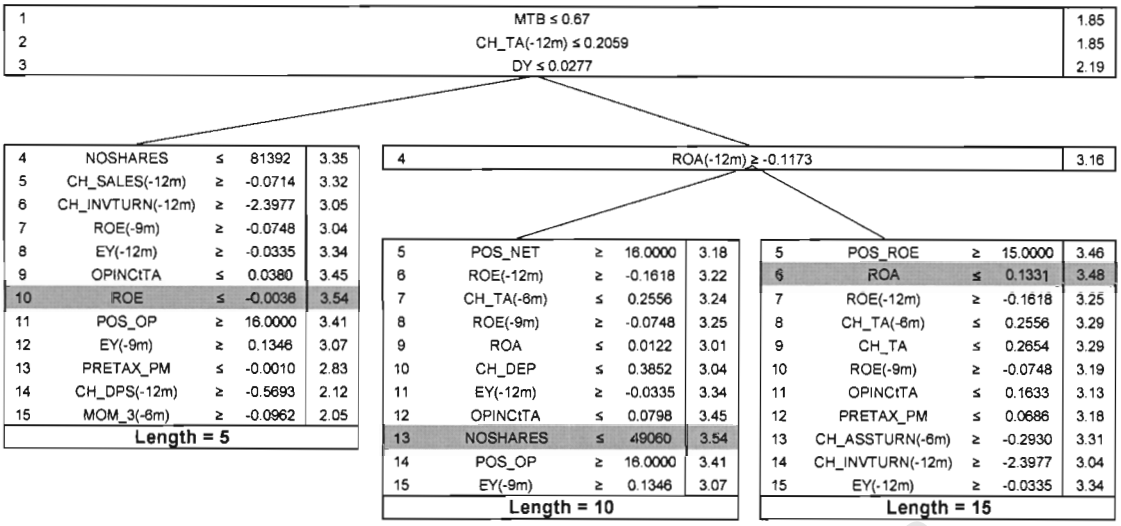
3	DY ≤ 0.0277			2.19

4	NOSHARES	≤	81392	3.35
5	CH_SALES(-12m)	≥	-0.0714	3.32
6	CH_INVTURN(-12m)	≥	-2.3977	3.05
7	ROE(-9m)	≥	-0.0748	3.04
8	EY(-12m)	≥	-0.0335	3.34
9	OPINCtTA	≤	0.0380	3.45
10	ROE	≤	-0.0036	3.54
11	POS_OP	≥	16.0000	3.41
12	EY(-9m)	≥	0.1346	3.07
13	PRETAX_PM	≤	-0.0010	2.83
14	CH_DPS(-12m)	≥	-0.5693	2.12
15	MOM_3(-6m)	≥	-0.0962	2.05
	Length = 5			

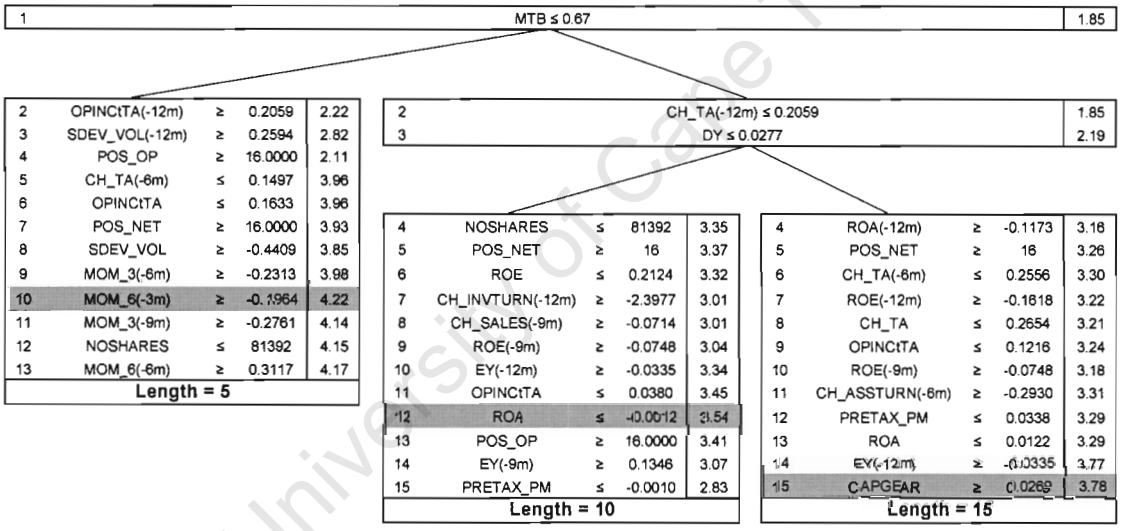
4	ROA(-12m)	≥	-0.1173	3.16
5	POS_NET	≥	16.0000	3.26
6	ROE(-12m)	≥	-0.1618	3.18
7	CH_TA(-6m)	≤	0.2556	3.22
8	ROE(-9m)	≥	-0.0748	3.08
9	ROA	≤	0.0122	3.20
10	CH_DEP	≤	0.3852	3.29
11	EY(-12m)	≥	-0.0335	3.77
12	OPINCtTA	≤	0.0798	3.78
13	NOSHARES	≤	49060	3.54
14	POS_OP	≥	16.0000	3.41
15	EY(-9m)	≥	0.1346	3.07
	Length = 10			

3	CH_INVtTA(-12m)	≥	-0.0248	1.70
4	CH_ASSTURN(-6m)	≥	-0.0970	1.66
5	PRETAX_PM	≤	0.1034	1.80
6	DY	≤	0.0325	1.92
7	CH_TA	≤	0.3215	1.94
8	ROE(-12m)	≥	-0.1618	2.05
9	POS_OP	≥	8.0000	2.03
10	MOM_6(-3m)	≥	-0.1964	1.86
11	CH_ARISALES	≤	-0.0592	1.28
12	OPINCtTA	≤	0.1216	1.31
13	CH_TA(-6m)	≤	0.1497	1.34
14	ROE	≤	0.0828	1.37
15	CH_INVTURN(-6m)	≥	-2.3977	1.54
	Length = 15			

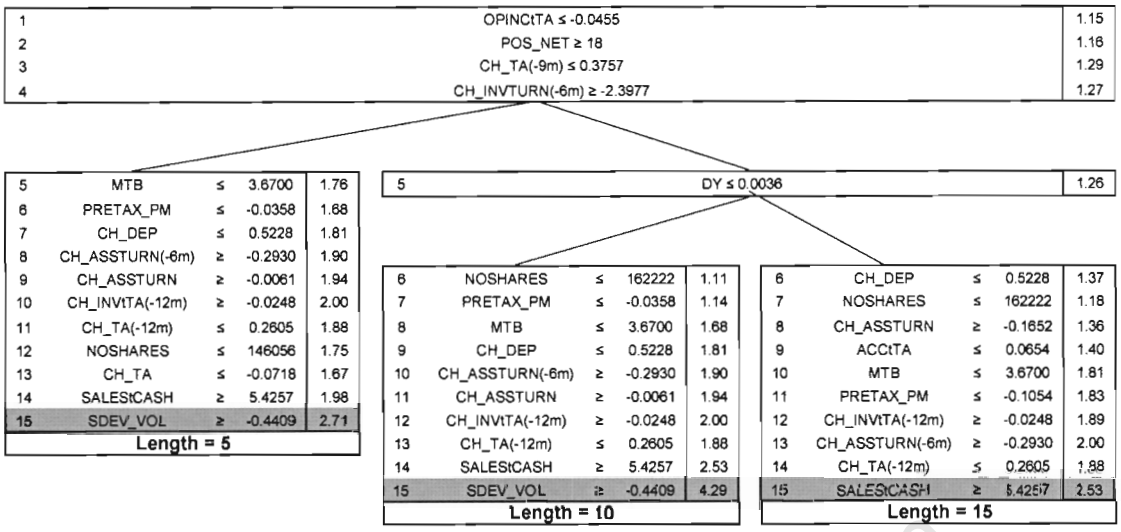
Panel E: Initial comparison level = 40 percent



Panel F: Initial comparison level = 45 percent



Panel G: Initial comparison level = 50 percent



By examining the first few filters in each of the above figures it is evident once again that the types of filters which are chosen in each case are quite similar. Once again the frequent variables are considered in terms of their categories:

(i) Valuation — Once again the filters select stocks with low market-to-book (MTB) ratios showing that they focus on undervalued shares. These dynamic tests do seem to place more emphasis on this variable, however. Past earnings yield (EY) also again appears as important.

(ii) Technical — Again the main current technical measure which is chosen is number of shares (NOSHARES), although it does appear more often and at higher filter levels. Volatility of volume traded (SDEV_VOL) is chosen as a filter once and at a relatively low filter level. Lagged momentum (MOM) also appears again as an important past technical measure. On the other hand, past volume volatility (SDEV_VOL) appears but not in a position of great importance.

(iii) Fundamental:

Profitability — Three measures of current profitability are chosen at various

stages: operating income to total assets (OPINCtTA), gross margin (GM) and pretax profit margin (PRETAX_PM). None of these variables appear frequently, however.

Past change in earnings before tax to sales (CH_EBITtSALES) is the most frequent measure of past profitability. Past operating income to total assets (OPINCtTA) also appears.

Performance Twelve month earnings growth (EARNG_12) and dividend yields (DY) are the most frequent measures of current profitability. Returns on assets (ROA) and equity (ROE) still appear but less frequently and at a lower filter levels than the static comparison level tests. Past performance is again separated through past return on equity and assets as well as through past dividend yields.

Leverage Once again no leverage measures are chosen.

Liquidity Both current and past measures of liquidity again do not appear to be important.

Efficiency Efficiency measures are again the most frequently appearing category of variables. Current efficiency in terms of working capital management, and in particular effective management of accounts receivable, appears most frequently (CH_ARISALES). Measures of overall asset efficiency are less important.

On the other hand, the filtered companies past efficiency seems mainly to stem from inventory (past change in inventory to total assets [CH_INVtTA], past change in inventory turnover [CH_INVTURN]) and total assets (past change in total assets [CH_TA], past change in asset turnover [CH_ASSTURN]).

(iv) <u>Industry position</u> Measures of current industry position in terms of both margins and returns on equity are again chosen relatively

frequently.

6.7 Evaluation and choice of final filter combinations

So far this chapter has derived a methodology based on a stepwise median comparison technique in order to identify combinations of filters which result in significant returns. It then applies this methodology using both a static and a dynamic comparison level. This section aims to amalgamate the results from the previous sections in order to derive a single set of filters to predict extreme winners. By summarizing the frequency with which particular filters appear and applying the evaluation techniques presented in Section 6.4, the best set of filters is chosen.

Appendix D.11. shows all signals which are chosen as filters earlier in the chapter. This appendix breaks these variables into each of the variable categories: valuation measures, technical indicators, fundamental measures (profitability, performance, leverage, liquidity and efficiency) and industry position variables.

An effective filter is one which significantly improves the performance of a model. Appendix D.11. therefore shows the average marginal increase in the JK statistic and the Sharpe ratio due to the addition of a specific filter level with a specific variable. Furthermore, a filter is more likely to be robust and useful if it is repeatedly included in different filter combinations. In light of this, the number of times a filter appears is also shown. The product of the average marginal addition to an evaluation metric and the number of times that filter appears can therefore be used to evaluate a particular filter level as the sum will be maximized when the filter adds significant value or when the filter appears with great frequency.

It is evident from this Appendix D.11. that the Sharpe ratio and JK statistic are maximized by the same filter level in most variables' cases. This confirms that both these metrics evaluate the performance of the filters in a consistent manner.

A summary of only the best performing filters for each variable are shown in Table 6.2 below. These are the filters for which the product of the average marginal additions to the JK statistic and Sharpe ratio and frequency are maximized for each variable.

Table 6.2. Best performing filters (Summary of Appendix D.11.)

The table below indicates the best individual filter levels for each of the variables included in Appendix D.11. The best filter level for a variable is that level which maximises the total marginal addition to the Sharpe ratio. A variable is omitted from the below table if none of the filter levels considered for that variable result in a positive marginal change in the Sharpe ratio and the JK statistic.

The table also shows the frequency with which each variable appears within the first ten filters in each of the combinations of this chapter. Furthermore, the table shows the frequency with which the filter level listed for each variable appears in any filter combination, as well as the average marginal and total additions to both the JK statistic and the Sharpe ratio. The variables are sorted within each category by their average marginal additions to the Sharpe ratio. The highlighted variables indicate the top performing variables as identified in the write-up which follows.

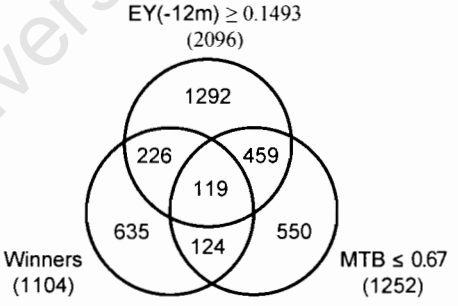
Category	Variable Top 10 Frequency	Variable		Filter level	Filter Frequency	JK Statistic		Sharpe Ratio	
						Average Marginal Addition	Total Addition	Average Marginal Addition	Total Addition
Valuation	13	**EY(-12m)**	≥	**0.1493**	**9**	**9.39**	**84.48**	**2.14**	**19.25**
	6	EY(-9m)	≥	0.1158	5	8.84	44.22	1.88	9.38
	19	**MTB**	≤	**0.6700**	**12**	**5.40**	**64.82**	**1.85**	**22.22**
Technical	9	**NOSHARES**	≤	**81392**	**5**	**4.53**	**22.65**	**0.87**	**4.33**
	1	**MOM_3(-9m)**	≥	**-0.0872**	**3**	**1.45**	**4.36**	**0.23**	**0.68**
	4	MOM_6(-6m)	≥	-0.0151	1	1.67	1.67	0.20	0.20
	1	SDEV_VOL(-12m)	≥	0.2594	4	0.90	3.60	0.19	0.76
	7	MOM_6(-3m)	≥	0.0666	1	0.79	0.79	0.14	0.14
	3	MOM_3(-6m)	≥	-0.2313	1	0.73	0.73	0.12	0.12
Profitability	12	**OPINCtTA**	≤	**-0.0455**	**4**	**1.79**	**7.17**	**1.15**	**4.60**
	0	SALEStCASH	≥	5.4257	3	2.06	6.18	0.54	1.63
	3	OPINCtTA(-12m)	≥	0.2059	1	0.71	0.71	0.37	0.37
	4	CH_SALES(-9m)	≥	0.0716	3	1.67	5.01	0.28	0.84
	1	GM	≥	-0.0822	2	0.92	1.83	0.27	0.54
	6	CH_EBTtSALES(-12m)	≥	-0.7558	5	0.81	4.05	0.13	0.64
	12	PRETAX_PM	≤	0.0686	1	0.09	0.09	0.05	0.05
Performance	5	**EARNG_12**	≥	**0.0248**	**2**	**7.58**	**15.16**	**0.98**	**1.97**
	10	**ROA(-12m)**	≥	**-0.1173**	**6**	**5.65**	**33.88**	**0.91**	**5.43**
	5	ROE	≤	0.2556	3	4.07	12.22	0.57	1.70
	1	EARNG_24(-9m)	≥	0.1821	1	1.02	1.02	0.48	0.48
	11	DY	≤	0.0277	7	1.01	7.05	0.33	2.33
	0	CH_DPS(-12m)	≥	-0.4221	1	1.17	1.17	0.22	0.22
	0	EARNG_24(-12m)	≥	0.0333	1	0.85	0.85	0.16	0.16
	0	REVISION_12	≤	0.2044	3	0.55	1.66	0.16	0.47
	0	GFORECAST_12	≤	2.0550	2	0.44	0.88	0.16	0.31
	2	ROA	≤	-0.0012	1	0.45	0.45	0.09	0.09
	1	DY(-12m)	≥	0.0229	3	0.27	0.82	0.08	0.23
	0	REVISION_24	≤	0.1064	1	0.07	0.07	0.03	0.03
Leverage	0	CAPGEAR	≥	0.1317	1	0.17	0.17	0.06	0.06
Liquidity	0	CH_QUICK	≤	0.0110	3	0.60	1.80	0.01	0.03
Efficiency	12	**CH_ARISALES**	≤	**0.0922**	**8**	**4.06**	**32.48**	**0.68**	**5.43**
	7	CH_TA	≤	0.1530	1	5.45	5.45	0.67	0.67
	3	ACCtTA	≤	0.0884	2	4.81	9.61	0.59	1.17
	7	**CH_TA(-6m)**	≤	**0.1497**	**3**	**2.71**	**8.14**	**0.45**	**1.36**
	13	CH_DEP	≤	0.3852	6	2.61	15.64	0.38	2.26
	15	CH_TA(-12m)	≤	0.1513	1	2.69	2.69	0.35	0.35
	0	CH_DEP(-12m)	≤	0.3734	2	1.07	2.13	0.23	0.47
	2	CH_INVISALES(-9m)	≤	0.3021	6	0.39	2.33	0.12	0.69
	7	CH_TA(-9m)	≤	0.3757	6	0.26	1.56	0.11	0.65
	1	CH_INVtTA	≥	-0.0194	3	0.18	0.53	0.09	0.26
	8	CH_ASSTURN(-6m)	≥	-0.2930	9	0.16	1.43	0.08	0.68
	4	CH_ASSTURN	≥	-0.1652	6	0.00	0.01	0.07	0.39
	4	CH_INVTURN(-12m)	≥	-0.7389	1	0.19	0.19	0.06	0.06
	1	NTC	≥	12.7478	6	0.05	0.29	0.01	0.06
Position	6	**POS_ROE**	≥	**15.0000**	**2**	**1.16**	**2.32**	**0.21**	**0.41**
	13	POS_NET	≥	16.0000	5	0.11	0.54	0.08	0.39
	7	POS_OP	≥	4.0000	4	0.12	0.46	0.05	0.22

After examining the output of Appendix D.11., one or two filters are selected per category. This number is restricted in order to maximize the number of observations selected and to ensure that the results are robust and are not fitted to idiosyncrasies in the data. Furthermore, by selecting variables from every category, it ensures that a complete perspective of the properties of extreme winners is acquired.

Firstly, in terms of valuation two possible variables are identified: market-to-book ratio (MTB) measuring current valuation and one-year lagged earnings yield (EY[-12m]) measuring past valuation. These variables are chosen as both increase the evaluation metrics significantly and appear frequently within filter combinations. These variable helps to isolate undervalued shares. However, both of these valuation measures may not be necessary. The venn diagram in Figure 6.12 below illustrates the degree to which these variables restrict the sample:

Figure 6.12. Venn diagram of valuation measures

The venn diagram below illustrates the number of observations (out of a possible 12840) included by each of the two valuation filters (MTB ≤ 0.67 and EY(−12m) ≥ 0.1493) when applied to the full insample dataset over the period from January 1995 until December 2004. In addition, the diagram shows the degree to which these two filters isolate winner observations (1104 possible observations).



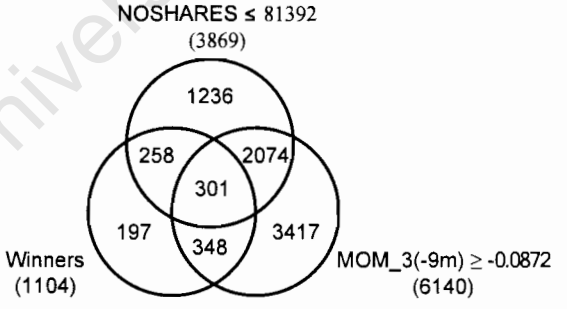
As can be seen from the above diagram, the MTB filter is much more restrictive, choosing only 1252 observations as opposed to the 2096 of EY(-12m). Furthermore, the former isolates far fewer winner observations (243 as opposed to 345). Since there are still a number of other filters to be included which could refine the sample substantially, EY(-12m) will be used as the only valuation measure due to its less restrictive nature. This is contrary to Reinganum (1988) who finds that market-to-book is a more effective signal of extreme performance.

Secondly, two technical measures are considered: number of shares (NOSHARES) as a current measure and nine-month lagged three-month momentum (MOM_3[-9m]) as a past measure. Once again these two variables are chosen due to large degree to which they increase the JK statistic and Sharpe ratios and the frequency with which they appear in the earlier filter combinations.

NOSHARES is found to be useful as it takes into account the effect of having a fixed, small supply of shares available to the public. According to O'Neil (2002), if demand increases significantly in such a scenario, the low fixed supply could cause the price to be bid up further, resulting in extreme performance. On the other hand, MOM_3(-9m) takes past short-term trends into account, and could help indicate the start of a herd-effect in the market which could bid up the price substantially. Once again the effect of these filters on the sample size is illustrated in Figure 6.13 below:

Figure 6.13. Venn diagram of technical indicators

The venn diagram below illustrates the number of observations (out of a possible 12840) included by each of the two technical filters (NOSHARES ≤ 81392 and MOM_3(-9m) ≥ -0.0872) when applied to the full insample dataset over the period from January 1995 until December 2004. In addition, the diagram shows the degree to which these two filters isolate winner observations (1104 possible observations).



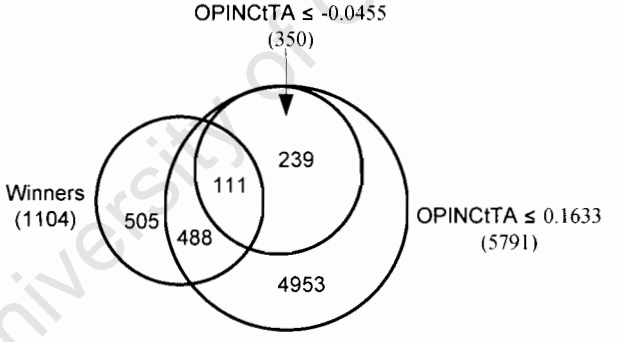
The venn diagram above clearly illustrates that the momentum filter is far less restrictive (isolating 6140 as opposed to 3869 observations) and also includes far more winner observations (649 as opposed to 559). Once again, due to the less restrictive nature of the momentum filter this screen will be kept instead of the number of shares.

Thirdly, operating income to total assets (OPINCtTA) is chosen as the only measure of profitability. No other profitability variables appear nearly as often or increase the evaluation metrics by nearly as much. This indicates that the companies have limited profitability and hence may explain why their potential has not yet been spotted by the market.

However, unlike the variables considered thus far it is unclear which filter level should be applied to this variable. Appendix D.11. shows that filtering out observations with OPINCtTA less than 16.3 percent and -4.5 percent both prove effective at increasing the evaluation metrics. The effect of these two alternatives on sample size is illustrated in Figure 6.14 below:

Figure 6.14. Venn diagram of OPINCtTA

The venn diagram below illustrates the number of observations (out of a possible 12840) included by each of the OPINCtTA filters (≤ 0.1633 and ≤ −0.0455) when applied to the full insample dataset over the period from January 1995 until December 2004. In addition, the diagram shows the degree to which these two filters isolate winner observations (1104 possible observations).

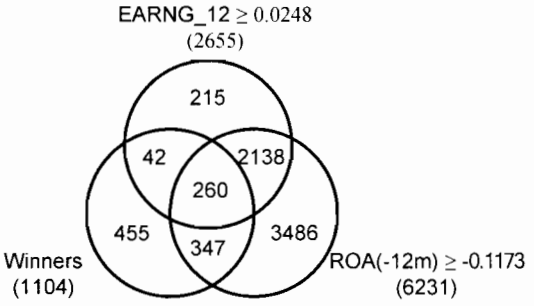


As suggested by intuition, the less stringent filter of OPINCtTA less than or equal to 16.3 percent results in a much larger sample size and numerous more winners being selected. Therefore this filter level will be applied.

Fourthly, 12 month earnings growth (EARNG_12) is selected as a current performance measure and one-year lagged return on assets is selected as a past performance measure. As in the previous categories, these two variables are selected due to their frequent appearance in the earlier filter combinations and the large degree to which they increase the evaluation metrics. Again, the effect of these filters on the sample is illustrated in Figure 6.15 below:

Figure 6.15. Venn diagram of performance variables

The venn diagram below illustrates the number of observations (out of a possible 12840) included by each of the performance filters (EARNG_12 ≥ 0.0248 and ROA(−12m) ≥ −0.1173) when applied to the full insample dataset over the period from January 1995 until December 2004. In addition, the diagram shows the degree to which these two filters isolate winner observations (1104 possible observations).



As illustrated above, ROA(-12m) almost entirely captures the effect of EARNG_12 and picks far more winners. Therefore this less stringent filter is included in the final model.

Fifthly, no leverage or liquidity measures are selected as no variables from either of these categories ever appear within the first ten filters of any of the filter combinations.

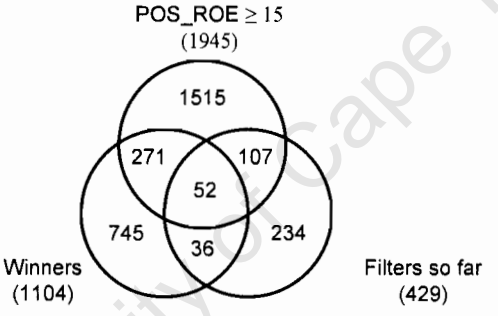
Sixthly, because efficiency is found to be such an important quality in extreme winners, two variables from this category are retained: one as a measure of past efficiency and one as a measure of current efficiency. For past efficiency, six month lagged change in total assets (CH_TA[-6m]) is chosen as it increases the Sharpe ratio by more than other measures of past efficiency. This shows that the growth in assets was limited until at least six months ago, indicating that capital has been channeled towards improving the profitability of existing investments.

Change in accounts receivable less sales (CH_ARlSALES) is selected as it is the best performing current efficiency measure. This shows points not only increasing accounts receivable efficiency but may also indicate that sales are increasing without the stimulation of credit sales.

Finally, position in the industry in terms of return on equity (POS_ROE) is selected as it is the most common industry position variable. However, this signal is not as important as the preceding variables as its effect is partly captured by performance measures. Furthermore, companies are compared to other companies in the same economic group, despite there being a diverse range of operations within each of these groups. Therefore there is some skepticism as to whether this category of variables should be included at all in studies on the JSE Securities Exchange. Figure 6.16 below indicates the effect of adding this position filter to the existing filters identified above:

Figure 6.16. Venn diagram of position variables

The venn diagram below illustrates the number of observations (out of a possible 12840) included by the filters so far as well as with the inclusion of POS_ROE ≥ 15 when applied to the full insample dataset over the period from January 1995 until December 2004. In addition, the diagram shows the degree to which these two filters isolate winner observations (1104 possible observations).



POS_ROE restricts the sample substantially. In fact it more than halves the number of observations included by the filter combination. Since this variable is not the most economically reliable, the need for diversification outweighs any benefit which could be derived from it. Therefore no position variables are included in the final model.

Table 6.3 below summarizes the variables chosen above. The excellent performance of this final filter combination is also clearly illustrated in this table. As can be seen the final portfolio earns a average return of 62 percent and has a portfolio standard deviation of 16 percent. These excellent statistics result in a Sharpe ratio of 3.13. There is also a substantial size holding under the portfolio, implying that a certain degree of diversification is possible. A list of shares picked by this filter, along with their buy dates and resulting 12 month return are shown in Appendix D.12.

Table 6.3. Final winner filters

The table below shows the final combination of filters chosen. The table also shows the average number of companies held per month resulting from the addition of each filter. The number of companies held as a proportion of the total sample is also shown along with the number of winner observations selected over the entire sample period. The average portfolio returns and annualized monthly portfolio standard deviations are also shown. Finally, the Sharpe ratio for each portfolio as subsequent filters are added is tabulated.

	Category	Variable		Filter level	Average number of companies per month	No of companies as a proportion of sample	Number of winners	Average portfolio return	Portfolio standard deviation	Sharpe Ratio
1	Valuation	EY(-12m)	≥	0.1493	49.7	46.45%	288	49.85%	16.09%	2.43
2	Technical	MOM_3(-9m)	≥	-0.0872	46.9	43.85%	224	51.03%	15.95%	2.53
3	Profitability	OPINCtTA	≤	0.1633	38.7	36.17%	143	51.36%	15.70%	2.59
4	Performance	ROA(-12m)	≥	-0.1173	37.7	35.25%	141	52.56%	15.36%	2.73
5	Past Efficiency	CH_TA(-6m)	≤	0.1497	26.1	24.42%	88	52.68%	14.96%	2.81
6	Current Efficiency	CH_ARISALES	≤	0.0922	18.4	17.15%	74	62.27%	16.44%	3.13

6.8 Comparison to stepwise Sharpe maximization procedure

An alternative to the stepwise median comparison procedure is to apply a similar stepwise framework, but instead to add the subsequent filter which maximizes the Sharpe ratio. As mentioned in Section 6.4, since the Sharpe ratio better evaluates a filter than the z-statistic of the Wilcoxon signed ranks test, this method has a greater intuitive appeal.

The problem with this alternative, however, is that only one combination of filters is created as no parameters can be altered. This is in contrast to the median comparison procedure which creates a different combination for each different comparison level applied. This presents the potential problem inherent in all stepwise procedures that the one solution generated is not necessarily the maximal outcome. This section contrasts the results obtained from a stepwise Sharpe maximisation procedure to the findings of this chapter in order to determine whether this method is in fact better or not. Table 6.4 below shows the filter combination generated from this process.

Table 6.4. Results of stepwise Sharpe maximisation procedure

The table below shows the filter combination selected by the stepwise Sharpe maximisation procedure, and the resulting Sharpe ratio resulting from the addition of each filter. The table also shows the average number of companies held per month resulting from the addition of each filter. The number of companies held as a proportion of the total sample is also shown along with the number of winner observations selected over the entire sample period. The average portfolio returns and annualized monthly portfolio standard deviations are also shown. The filter which maximises the Sharpe ratio is highlighted.

Sharpe Ratio	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation
2.433	EY(-12m)	≥	0.1493	49.70	46.45%	288	49.85%	16.09%
3.141	CH_ARISALES	≤	0.0165	32.35	30.23%	193	66.12%	17.69%
3.624	EARNG_24(-9m)	≥	0.1821	5.15	4.81%	31	102.56%	25.58%
3.978	CH_EBTtSALES(-12m)	≥	-0.7558	4.32	4.03%	31	115.17%	26.43%
3.789	POS_ROE	≥	11.0000	1.95	1.82%	24	143.69%	35.06%
4.508	CH_DEP	≤	0.1099	1.02	0.95%	20	164.78%	34.20%
5.313	ACCtTA	≤	0.0654	0.87	0.81%	16	198.26%	35.49%
5.452	MTB	≤	2.1700	0.85	0.79%	15	195.33%	34.02%
5.525	**MOM_3(-6m)**	**≥**	**-0.0287**	**0.83**	**0.78%**	**14**	**199.26%**	**34.31%**
5.499	MOM_6(-6m)	≥	-0.1785	0.78	0.73%	13	200.43%	34.67%
5.303	NOSHARES	≤	146056	0.57	0.53%	11	197.22%	35.29%
5.313	POS_NET	≥	14.0000	0.55	0.51%	10	199.03%	35.57%
5.232	EARNG_24(-12m)	≥	-0.1674	0.53	0.50%	9	195.57%	35.47%
5.476	MOM_3(-9m)	≥	-0.0872	0.52	0.48%	8	203.27%	35.35%
5.300	CH_DPS(-9m)	≥	0.4048	0.50	0.47%	7	197.96%	35.52%
5.162	CH_TA(-6m)	≤	0.0968	0.48	0.45%	6	194.51%	35.79%
4.794	MOM_6(-3m)	≥	-0.0386	0.48	0.45%	4	181.91%	35.79%
4.532	SDEV_VOL	≥	-0.4409	0.47	0.44%	2	175.21%	36.45%

Figure 6.17 below compares the Sharpe ratios of the stepwise median comparison and Sharpe maximisation procedures. Since only six final filters are derived under the median comparison test, values for the Sharpe ratio are only available up to this point. At first glance it appears that the Sharpe maximisation procedure far outperforms the original technique as the Sharpe ratio is always at least as high.

However, the analysis changes slightly when the average number of companies selected per month under each strategy is considered, as shown in Figure 6.18. This graph shows that the median comparison method selects far more companies, leading to a greater potential for diversification. In fact with the addition of the fourth filter, the number of companies selected per month by the Sharpe method drops below five, while it remains above 35 for the original technique. This larger sample size may therefore more than compensate for the marginally lower Sharpe ratios. Both of these combinations are tested on the independent sample in Chapter 8 to verify which is in fact better.

Figure 6.17. Comparison of Sharpe ratios between stepwise methodologies

The graph below compares the Sharpe ratios attained by the stepwise median comparison and Sharpe maximisation procedures, with the addition of subsequent filters.

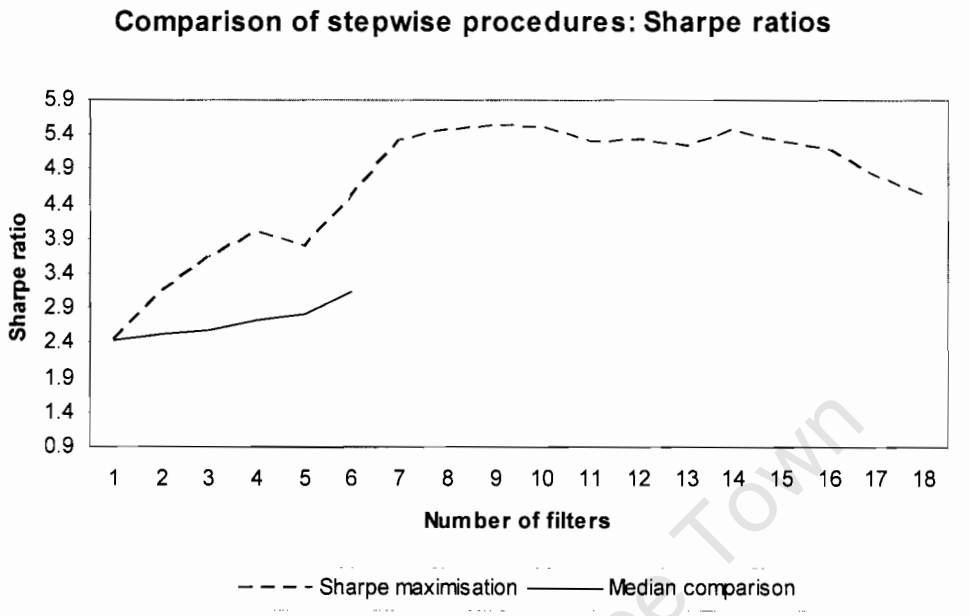
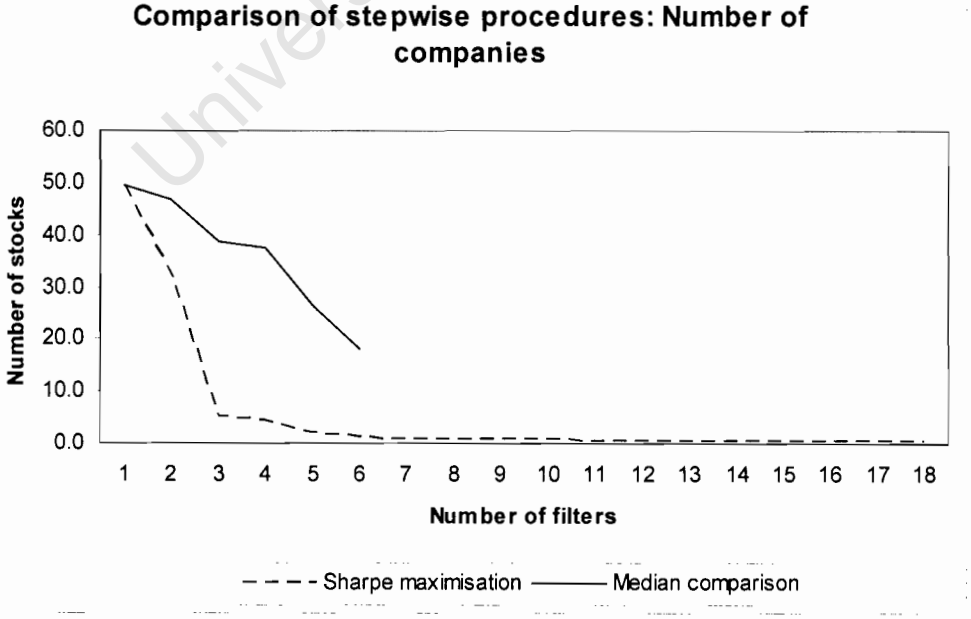


Figure 6.18. Comparison of number of companies between stepwise methodologies

The graph below compares the average number of companies selected per month by the stepwise median comparison and Sharpe maximisation procedures, with the addition of subsequent filters. The graph clearly illustrates that the median comparison procedure outperforms the alternative.



6.9 Summary and Conclusion

This chapter presents the methodology and results of the procedure used to build a final winner filter combination. At the core of this chapter is derivation of the stepwise median comparison procedure: a unique technique for building filter combinations. This process adds consecutive filters to a combination based on their ability to maximize the z-statistic of the Wilcoxon signed ranks test, where this test is used to compare the return of the filtered portfolio to a prespecified comparison level.

Since it is not feasible to consider every possible value for every variable as a potential filter, two techniques are presented for forming potential filter levels for each variable. The first method decomposes each variable into deciles and uses each decile cutoff point as a filter level. The second method calculates the difference between the medians of the winner and non-winner portfolios for each variable, and considers five values on each side of the winner median based on this difference. After applying both techniques, it is clear that the relative median technique performs better.

Furthermore, it is found that when all variables over the entire ten year period are considered for the stepwise procedure, the resulting filters are biased towards later years in selecting shares. Two alternatives are considered to overcome this problem: (1) conducting the stepwise procedure with only those variables for which there are significant observations throughout the sample period; or (2) conducting the stepwise procedure with all variables but over the last five years of the sample. The second alternative not only provides a more holistic view of the shares by including a wide range of variables, but also performs far better.

The stepwise median comparison test is then repeatedly run, each time altering the comparison level in the Wilcoxon signed ranks test. This comparison level is first set at a static level between 20 and 54 percent for each included filter. A second set of tests then considers a dynamic comparison level, starting between 20 and 50 percent and gradually increasing to 100 percent over either five, ten or fifteen filters. The results are analysed and amalgamated with careful consideration for the effect of each

filter on the Sharpe ratio, JK statistic and sample size. The product of this process is a set of six filters, termed the final winner filter combination.

Finally, this combination is compared to the results from a simpler stepwise Sharpe maximisation procedure which results in only one solution. Although the original combination does not outperform this alternative in terms of Sharpe ratio, it does result in a significantly larger sample size. The resultant portfolios are contrasted in an independent sample in Chapter 8.

This chapter therefore achieves the two objectives set out in Section 6.1: (1) it reduces the number of significant variables to only six; and (2) filter values for each of these variables is derived.

-7-

Derivation of Loser Filter Rules

7.1 Introduction

Chapter 5 identifies 76 signal variables that are significantly different between extreme losers and non-losers as well as between extreme losers and the same shares before the start of extreme performance (pre-losers). As in Chapter 6 this chapter aims to reduce this number to a manageable amount and to derive filter rules to allow for the easy extraction of potential extreme losers.

In order to achieve this feat the same methodology as Chapter 6 is applied: a stepwise median comparison test based on the Wilcoxon signed ranks test is used. The filter levels considered for each variable are based on the differences between the medians of the loser and non-loser portfolios for each variable. Each of the eleven resulting filter levels for all variables are shown in Appendix E.1. The sample is restricted to the period from January 2000 until December 2004 due to the shortage of variable data in the earlier years of the sample.

One of the problems with this methodology, and with all stepwise procedures in general, is that it results in a solution which is optimal but not necessarily maximal (Norton and Smith, 1979). This problem is overcome when every possible permutation of variable combinations is considered. However, due to the large number of variables under investigation, such an iterative procedure would be far too prohibitve. Instead, the stepwise median comparison test is rerun numerous times, each time varying the comparison level. By changing this parameter in the Wilcoxon signed ranks test it is expected that different filter combinations will be chosen. By comparing the results across all the resulting filter combinations, it is more likely that the maximal solution, or at least a more optimal solution, will be derived.

Section 7.2 continues by applying the stepwise methodology to the data when a range of static comparison levels are used for the stepwise median comparison test. The section documents the results and draws conclusions regarding the nature of the filters chosen. Section 7.3 follows a similar structure except that uses a variety of dynamic comparison levels in the stepwise procedure.

Section 7.4 evaluates the filters combination derived in the preceding two sections. This section carefully examines the nature and categorisation of frequently important filter variables. Based on this analysis, a final loser filter combination is constructed. The section ends by providing a brief evaluation of this final filter combination when applied to the insample data. Section 7.5 contrasts the performance of this portfolio to that of the combination derived from a stepwise Sharpe maximisation procedure. Finally, Section 7.6 summarizes the chapter and draws conclusions.

7.2 Stepwise median comparison: static comparison levels

The aim of this chapter is to derive screening rules to identify extreme losers, where extreme losers are those shares whose prices at least halve in a twelve month period. Therefore, ideally the stepwise median comparison test should compare filtered portfolio returns to a comparison level of -50 percent. However, the stringency of such a comparison level is so great that no initial filter level is chosen. In fact, this is the case with all comparison levels below -5 percent.

There are an infinite number of potential comparison levels which can be applied. However, since there is no ex-ante method for determining which comparison level is best, and which will results in the most optimal solution, a range of levels are tested. In this section the stepwise median comparison procedure is run six times, with static comparison levels ranging from 20 percent to -5 percent.

Appendix E.2. shows the filter combinations derived under each of these scenarios. Furthermore this appendix shows the number of companies, the number of companies as a proportion of the total sample and number of losers included by the filters. The resulting average return and portfolio standard deviation is also shown. Finally, the JK

statistic and Sharpe ratio for each is shown. In addition, the appendix shows the calendar time payoffs for each filter. Figure 7.1 below summarizes the results for these six variations.

Figure 7.1. Summary of results for median comparison test: static comparison level

The tables below show the first fifteen filters under each of the six unique combinations of filters derived from the stepwise median comparison test when the static comparison level is varied from 20 percent to −5 percent. The sample is restricted to the years from 2000 until 2004. The tables show not only the filtering variable at each stage but also the filter value and direction. The last column of each combination indicates the Sharpe ratio for the corresponding filter combination. The block at the bottom of each column shows the comparison level under which the corresponding filter combination is derived. The highlighted row indicates the filter which maximises the Sharpe ratio.

1	MTB	≥	2.4700	-0.07
2	MAXP_12	≤	0.9943	-0.33
3	EY	≤	0.1633	-0.39
4	AGE	≤	14.0056	-0.70
5	DY	≤	0.0452	-0.83
6	SALEStCASH(-9m)	≤	8.1046	-1.20
7	**SALEStCASH**	**≤**	**21.3249**	**-1.24**
8	MAXP_24	≤	0.9431	-1.20
9	SALEStCASH(-12m)	≤	11.2449	-1.17
10	RSTRENGTH_ALSI	≤	0.8284	-1.21
11	MOM_12	≤	0.5352	-1.12
12	WRSTRENGTH_ALSI	≤	0.7347	-1.10
13	POS_NET(-9m)	≥	5.0000	-1.11
14	POS_NET(-12m)	≥	5.0000	-1.08
15	WRSTRENGTH_ALSI(-9m)	≥	0.1548	-1.09
CL = 20%				

1	MTB ≥ 3.58			-0.29
2	POS_SALES	≤	13.0000	-0.89
3	DY	≤	0.0452	-1.11
4	POS_NET(-12m)	≥	5.0000	-1.29
5	EY	≤	0.1633	-1.28
6	POS_NET(-9m)	≥	5.0000	-1.33
7	MAXP_12	≤	1.0428	-1.28
8	MAXP_24	≤	0.9984	-1.29
9	**ACCtTA(-12m)**	**≤**	**0.0850**	**-1.32**
10	ACCtTA(-9m)	≤	0.0683	-1.31
11	CH_TA	≥	-0.1104	-1.22
12	WRSTRENGTH_ALSI(-9m)	≥	0.1548	-1.21
13	EARNG_12(-6m)	≥	-0.0049	-1.25
14	AGE	≤	14.0056	-1.16
15	RSTRENGTH_ALSI	≤	0.8284	-1.16
CL = 15%				

2	AGE	≤	4.8667	-1.22
3	DY	≤	0.0452	-1.39
4	EY	≤	0.1465	-1.39
5	MAXP_12	≤	1.0428	-1.38
6	EPS	≤	1.3800	-1.34
7	MAXP_24	≤	0.9984	-1.38
8	SALEStCASH	≤	24.8555	-1.42
9	ACCtTA(-9m)	≤	0.0683	-1.43
10	SALEStCASH(-9m)	≤	8.1046	-1.83
11	**RSTRENGTH_ALSI**	**≤**	**0.8284**	**-1.94**
12	MOM_12	≤	0.5352	-1.89
13	WRSTRENGTH_ALSI	≤	0.7347	-1.59
14	POS_SALES	≤	13.0000	-1.52
15	POS_NET(-9m)	≥	5.0000	-1.52
CL = 10%				

1	MTB ≥ 3.58			-0.29
2	CH_DEP ≥ 0.3359			-1.22
3	INVtTA ≤ 0.1952			-1.41
4	EY	≤	0.1633	-1.43
5	POS_ROE	≤	17.0000	-1.42
6	**INVtTA(-12m)**	**≤**	**0.1681**	**-1.44**
7	ACCtTA(-12m)	≤	0.0637	-1.44
8	INVtTA(-9m)	≤	0.1674	-1.43
9	ACCtTA(-9m)	≤	0.0683	-1.41
10	CH_ARtSALES	≥	-0.2913	-1.34
11	POS_SALES	≤	11.0000	-1.39
12	WRSTRENGTH_ALSI(-9m)	≥	0.1548	-1.36
13	GM	≤	0.3046	-1.40
14	DY	≤	0.0402	-1.28
15	MAXP_24	≤	0.9984	-1.28
CL = 5%				

4	EY	≤	0.1297	-1.44
5	INVtTA(-12m)	≤	0.1681	-1.47
6	POS_ROE	≤	17.0000	-1.47
7	**POS_SALES**	**≤**	**13.0000**	**-1.50**
8	CH_ARtSALES	≥	-0.2913	-1.44
9	ACCtTA(-12m)	≤	0.0637	-1.45
10	INVtTA(-9m)	≤	0.1674	-1.45
11	ACCtTA(-9m)	≤	0.0683	-1.43
12	WRSTRENGTH_ALSI(-9m)	≥	0.1548	-1.41
13	DY	≤	0.0452	-1.41
14	MAXP_24	≤	0.9984	-1.41
15	MAXP_12	≤	0.9943	-1.41
CL = 0%				

1	SALEStCASH(-12m)	≤	0.4647	-0.09
2	CH_TA(-9m)	≥	0.3650	-1.19
3	**CH_TA**	**≥**	**-0.1104**	**-1.45**
4	MAXP_24	≤	0.9431	-1.43
5	MAXP_12	≤	0.9457	-1.43
6	CH_DEP	≥	-0.1744	-1.45
7	CH_DEP(-12m)	≥	-0.3409	-1.42
8	CH_TA(-12m)	≥	0.0866	-1.39
9	WRSTRENGTH_ALSI(-9m)	≥	0.2764	-1.39
10	MTB	≥	0.6200	-1.39
11	SDEV_VOL(-9m)	≤	0.6368	-1.45
12	AGE	≤	11.3944	-1.40
13	VOL_12(-9m)	≤	1.3094	-1.40
14	MOM_6(-12m)	≥	-0.1273	-1.38
15	MOM_24	≤	0.9623	-1.37
CL = -5%				

By examining the first few filters in each of the combinations in Figure 7.1, it is evident that that the types of filters which are picked are often similar. These results can be summarized by considering their variable categories:

(i) Valuation

Only current valuation measures appear in the filters above. The filters select stocks with high market-to-book (MTB) ratios and low earnings yields (EY). This indicates that the losers identified tend to be highly priced relative to both their accounting book values and their earnings. This in turn may help to explain the subsequent price crash.

(ii) Technical

A number of technical measures appear in the filter combinations, the most frequent being a lower current price relative to the past 12 month high (MAXP_12) and 24 month high (MAXP_24). This indicates that the price has already fallen over past periods and links in closely with the 12 month momentum (MOM_12) which shows a clear downward trend in the share price.

Finally, the loser shares screened tend to be younger, possibly implying that less established companies are less secure and are more prone to large crashes. Glickman et al (2001) also claim that younger firms are more likely to commit financial fraud, have weaker governance structures, less developed information environments and a greater probability of financial distress.

(iii) Fundamental:

Profitability

The only profitability measure, past or present, which appears with any frequency is the sales to cash ratio (SALEStCASH). This variable shows that either sales has been decreasing or cash has been increasing, possibly indicating an inefficiency in working capital management.

Performance

The performance measure which appears with the most frequency is dividend yield (DY). The low filter values on this variable could indicate that poor performing firms often pay out low dividends, possibly to reinvest in failing

operations. This agrees with the low earnings per share (EPS) which is evidenced.

Leverage No leverage measures are chosen.

Liquidity Neither current nor past measures of liquidity appear to be important.

Efficiency Two distinct characteristics emerge on the examination of the included efficiency measures. Firstly, large increases in total assets (CH_TA) have occurred both in the current period and in past periods. This may indicate a large investment in new operations either to unnecessarily expand or to salvage performance. However, since these firms are also found to have low earnings yields the market may perceive this as investment to achieve anticipated future growth (Abarbnell and Bushee, 1997).

Secondly, there appears to be a large degree of inefficiency in working capital management. This is shown in totality by the low accruals to total assets (ACCtTA) in current and lagged periods. Furthermore, this inefficiency seems to stem from inefficiency in inventory and accounts receivable management (INVtTA and CH_ARlSALES). According to Lev and Thiagarajan (1993) this may indicate a difficulty in selling products, necessitating credit extensions.

(iv) Industry position

Measures of current and past industry position appear far more frequently than in the winner tests. Low measures of relative strength appear often. This once again links back to the valuation and technical measures in indicating that share performance in the filtered companies is worse than other companies in the market.

Furthermore, position variables in terms of return on equity (POS_ROE), sales growth (POS_SALES) and net margin

(POS_NET) appear. As in Chapter 6 there is some scepticism regarding the usefulness of these measures. This is evaluated later, however.

7.3 Stepwise median comparison: dynamic comparison levels

Thus far in this chapter the comparison level used in the Wilcoxon signed ranks test has been fixed at a particular level. However, as is evident from the above analysis, the higher this comparison level the more difficult it is to derive an initial entering filter. On the other hand, if this level is set too low the conditions of the test are too lenient and the resultant portfolio returns are not as impressive.

This section therefore replicates the technique used in Chapter 6 and applies a dynamic comparison level in the stepwise median comparison procedure. Once again, however, in order to create as many different optimal filters as possible, the parameters of the model are varied in a number of iterations. In particular, six different initial comparison levels are considered: 20 percent to -5 percent in decrements of 5 percent. Furthermore, for each of these six initial levels, the comparison level is gradually reduced to -50 percent within the inclusions of either five, ten, or fifteen filters. Eighteen different filter combinations therefore result.

Appendix E.3. documents these filter combinations as well as their performance in terms of effect on sample size, average return and standard deviation. Two evaluation metrics, the JK statistic and the Sharpe ratio are also shown for each filter. Finally, the appendix includes the calendar time payoffs for each filter. The results are summarized in Figure 7.2 below:

Figure 7.2. Summary of results for median comparison test: dynamic comparison level

The tables below show the unique combinations of filters derived from the stepwise median comparison test when the sample is restricted to the years from 2000 until 2004. Each panel of the figure shows the derived figures for a different starting comparison level ranging from 20 to −5 percent in decrements of 5 percent. Furthermore, results are shown for each starting level when this level is increased to −50 percent in a length of five, ten or fifteen filters. The tables show not only the filtering variable at each stage but also the filter value and direction. The last column of each combination indicates the Sharpe ratio for the corresponding filter combination. The highlighted row indicates the filter which maximises the Sharpe ratio.

Panel A: Initial comparison level = 20 percent

1	MTB ≥ 2.47			-0.07

2	AGE	≤	3.5611	-1.23
3	POS_OP	≤	15.0000	-1.37
4	DY	≤	0.0253	-1.47
5	EY	≤	0.1297	-1.73
6	CH_ARtSALES(-9m)	≥	0.0616	-1.98
7	SALEStCASH	≤	10.7330	-1.96
8	MAXP_24	≤	0.9431	-1.97
9	EARNG_12(-6m)	≥	-0.0049	-1.99
10	CH_DEP(-9m)	≥	0.3604	-1.97
11	MAXP_12	≤	0.8486	-1.95
12	EARNG_12(-9m)	≥	-0.0180	-2.04
13	WRSTRENGTH_ALSI(-9m)	≥	0.2156	-1.97
14	MOM_12	≤	0.5352	-2.06
15	**RSTRENGTH_ALSI**	**≤**	**0.7497**	**-2.07**
	Length = 5			

2	MAXP_12 ≤ 0.9942672			-0.33

3	CH_TA	≥	0.4036	-1.10
4	DY	≤	0.0452	-1.25
5	SALEStCASH	≤	14.2636	-1.38
6	SALEStCASH(-12m)	≤	8.5499	-1.40
7	POS_ROE	≤	17.0000	-1.54
8	EPS	≤	1.1900	-1.47
9	ROE(-9m)	≥	0.0497	-1.56
10	SALEStCASH(-9m)	≤	5.3979	-1.52
11	**POS_SALES**	**≤**	**12.0000**	**-1.57**
12	MAXP_24	≤	0.9431	-1.52
13	RSTRENGTH_ALSI	≤	0.7497	-1.53
14	EY	≤	0.1297	-1.51
15	MOM_12	≤	0.5352	-1.48
	Length = 10			

3	EY	≤	0.1129	-0.46
4	SALEStCASH	≤	7.2024	-0.90
5	AGE	≤	14.0056	-1.30
6	DY	≤	0.0352	-1.33
7	CH_TA	≥	0.2893	-1.34
8	SALEStCASH(-9m)	≤	8.1046	-1.33
9	POS_ROE	≤	17.0000	-1.46
10	**SALEStCASH(-12m)**	**≤**	**11.2449**	**-1.47**
11	EPS	≤	1.1900	-1.37
12	ROE(-9m)	≥	0.0497	-1.47
13	CH_ARtSALES	≥	-0.2913	-1.37
14	RSTRENGTH_ALSI	≤	0.8284	-1.40
15	INVtTA	≤	0.0572	-1.40
	Length = 15			

Panel B: Initial comparison level = 15 percent

1	MTB ≥ 3.58			-0.29

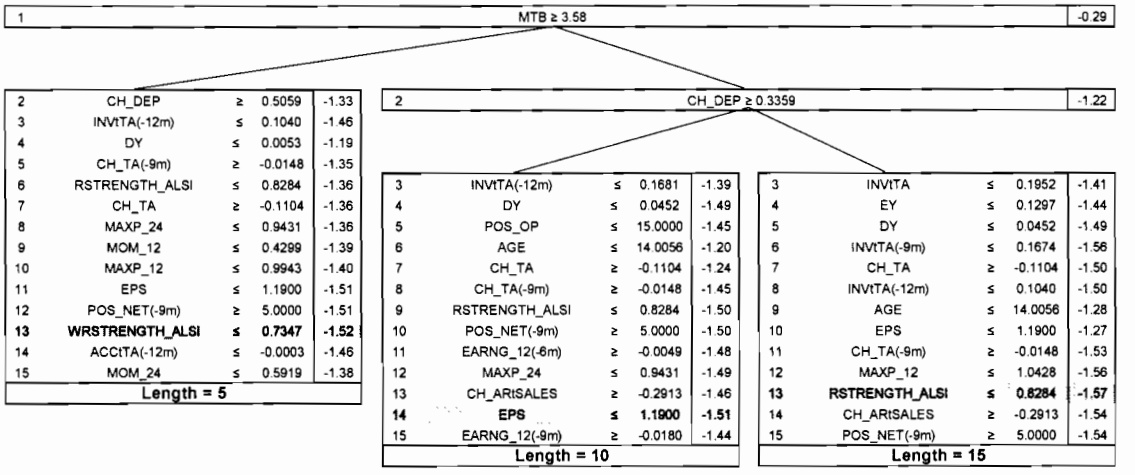
2	CH_DEP	≥	0.3359	-1.22
3	INVtTA	≤	0.0572	-1.49
4	DY	≤	0.0203	-1.28
5	ACCtTA(-9m)	≤	-0.0396	-1.51
6	CH_TA	≥	-0.1104	-1.54
7	POS_ROE	≤	11.0000	-1.54
8	**WRSTRENGTH_ALSI(-9m)**	**≥**	**0.1548**	**-1.55**
9	CH_ARtSALES	≥	-0.2913	-1.49
10	POS_SALES	≤	7.0000	-1.50
11	EARNG_12(-6m)	≥	-0.0049	-1.48
12	POS_NET(-9m)	≥	5.0000	-1.45
13	ACCtTA(-12m)	≤	-0.1283	-1.45
14	MAXP_24	≤	0.8877	-1.43
15	MOM_18	≤	0.3589	-1.34
	Length = 5			

2	AGE ≤ 4.8667			-1.22
3	DY ≤ 0.0452			-1.39
4	EY ≤ 0.1465			-1.39

5	POS_OP	≤	15.0000	-1.49
6	INVtTA	≤	0.0375	-1.46
7	MAXP_24	≤	0.9984	-1.48
8	RSTRENGTH_ALSI	≤	0.6710	-1.76
9	CH_TA	≥	-0.1104	-1.80
10	**CH_TA(-9m)**	**≥**	**-0.0623**	**-1.93**
11	MOM_12	≤	0.5352	-1.88
12	MAXP_12	≤	0.8486	-1.89
13	CH_ARtSALES	≥	-0.2913	-1.81
14	CH_DEP	≥	0.3359	-1.87
15	CH_INV	≥	-0.4171	-1.77
	Length = 10			

5	SALEStCASH	≤	24.8555	-1.40
6	SALEStCASH(-9m)	≤	8.1046	-1.85
7	EPS	≤	0.8100	-1.79
8	RSTRENGTH_ALSI	≤	0.8284	-1.91
9	MAXP_24	≤	0.9984	-1.90
10	**INVtTA**	**≤**	**0.0375**	**-2.11**
11	SDEV_VOL(-9m)	≤	1.0505	-1.47
12	ROE	≥	0.0642	-1.56
13	CH_TA	≥	-0.1104	-1.54
14	CH_TA(-9m)	≥	-0.0623	-1.48
15	MOM_12	≤	0.5352	-1.46
	Length = 15			

Panel C: Initial comparison level = 10 percent



1	MTB ≥ 3.58			-0.29

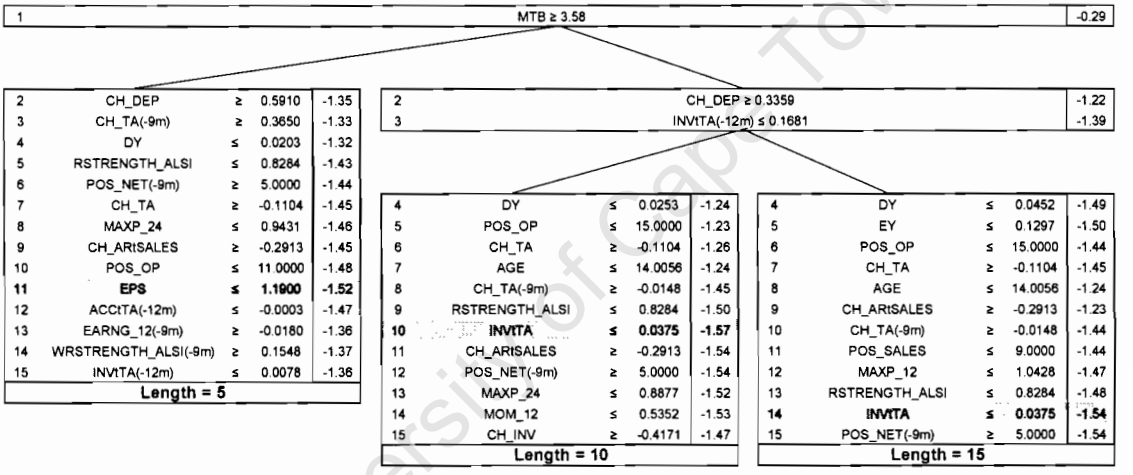
2	CH_DEP	≥	0.5059	-1.33
3	INVtTA(-12m)	≤	0.1040	-1.46
4	DY	≤	0.0053	-1.19
5	CH_TA(-9m)	≥	-0.0148	-1.35
6	RSTRENGTH_ALSI	≤	0.8284	-1.36
7	CH_TA	≥	-0.1104	-1.36
8	MAXP_24	≤	0.9431	-1.36
9	MOM_12	≤	0.4299	-1.39
10	MAXP_12	≤	0.9943	-1.40
11	EPS	≤	1.1900	-1.51
12	POS_NET(-9m)	≥	5.0000	-1.51
13	**WRSTRENGTH_ALSI**	**≤**	**0.7347**	**-1.52**
14	ACCtTA(-12m)	≤	-0.0003	-1.46
15	MOM_24	≤	0.5919	-1.38
Length = 5				

2	CH_DEP ≥ 0.3359			-1.22

3	INVtTA(-12m)	≤	0.1681	-1.39
4	DY	≤	0.0452	-1.49
5	POS_OP	≤	15.0000	-1.45
6	AGE	≤	14.0056	-1.20
7	CH_TA	≥	-0.1104	-1.24
8	CH_TA(-9m)	≥	-0.0148	-1.45
9	RSTRENGTH_ALSI	≤	0.8284	-1.50
10	POS_NET(-9m)	≥	5.0000	-1.50
11	EARNG_12(-6m)	≥	-0.0049	-1.48
12	MAXP_24	≤	0.9431	-1.49
13	CH_ARtSALES	≥	-0.2913	-1.46
14	**EPS**	**≤**	**1.1900**	**-1.51**
15	EARNG_12(-9m)	≥	-0.0180	-1.44
Length = 10				

3	INVtTA	≤	0.1952	-1.41
4	EY	≤	0.1297	-1.44
5	DY	≤	0.0452	-1.49
6	INVtTA(-9m)	≤	0.1674	-1.56
7	CH_TA	≥	-0.1104	-1.50
8	INVtTA(-12m)	≤	0.1040	-1.50
9	AGE	≤	14.0056	-1.28
10	EPS	≤	1.1900	-1.27
11	CH_TA(-9m)	≥	-0.0148	-1.53
12	MAXP_12	≤	1.0428	-1.56
13	**RSTRENGTH_ALSI**	**≤**	**0.8284**	**-1.57**
14	CH_ARtSALES	≥	-0.2913	-1.54
15	POS_NET(-9m)	≥	5.0000	-1.54
Length = 15				

Panel D: Initial comparison level = 5 percent



1	MTB ≥ 3.58			-0.29

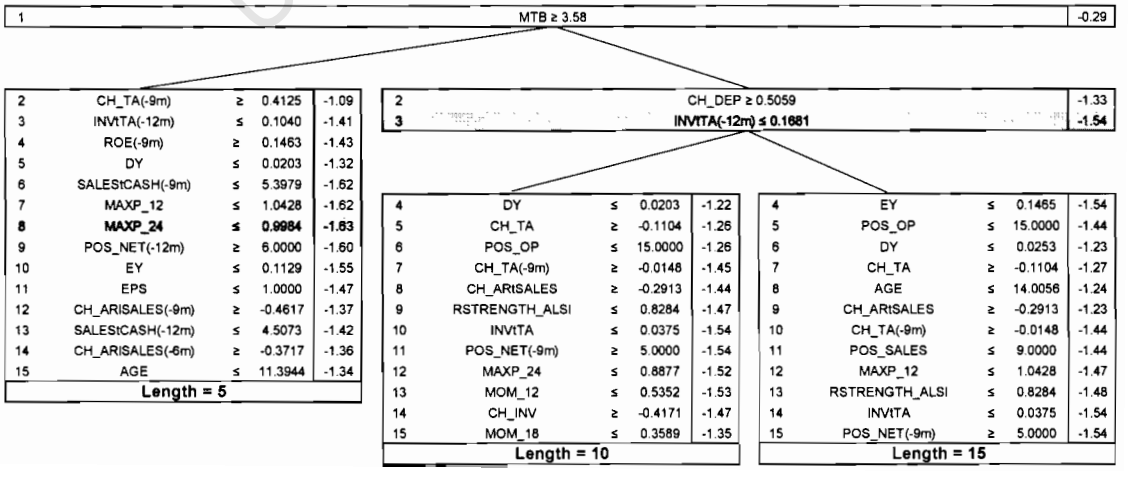
2	CH_DEP	≥	0.5910	-1.35
3	CH_TA(-9m)	≥	0.3650	-1.33
4	DY	≤	0.0203	-1.32
5	RSTRENGTH_ALSI	≤	0.8284	-1.43
6	POS_NET(-9m)	≥	5.0000	-1.44
7	CH_TA	≥	-0.1104	-1.45
8	MAXP_24	≤	0.9431	-1.46
9	CH_ARtSALES	≥	-0.2913	-1.45
10	POS_OP	≤	11.0000	-1.48
11	**EPS**	**≤**	**1.1900**	**-1.52**
12	ACCtTA(-12m)	≤	-0.0003	-1.47
13	EARNG_12(-9m)	≥	-0.0180	-1.36
14	WRSTRENGTH_ALSI(-9m)	≥	0.1548	-1.37
15	INVtTA(-12m)	≤	0.0078	-1.36
Length = 5				

2	CH_DEP ≥ 0.3359	-1.22
3	INVtTA(-12m) ≤ 0.1681	-1.39

4	DY	≤	0.0253	-1.24
5	POS_OP	≤	15.0000	-1.23
6	CH_TA	≥	-0.1104	-1.26
7	AGE	≤	14.0056	-1.24
8	CH_TA(-9m)	≥	-0.0148	-1.45
9	RSTRENGTH_ALSI	≤	0.8284	-1.50
10	**INVtTA**	**≤**	**0.0375**	**-1.57**
11	CH_ARtSALES	≥	-0.2913	-1.54
12	POS_NET(-9m)	≥	5.0000	-1.54
13	MAXP_24	≤	0.8877	-1.52
14	MOM_12	≤	0.5352	-1.53
15	CH_INV	≥	-0.4171	-1.47
Length = 10				

4	DY	≤	0.0452	-1.49
5	EY	≤	0.1297	-1.50
6	POS_OP	≤	15.0000	-1.44
7	CH_TA	≥	-0.1104	-1.45
8	AGE	≤	14.0056	-1.24
9	CH_ARtSALES	≥	-0.2913	-1.23
10	CH_TA(-9m)	≥	-0.0148	-1.44
11	POS_SALES	≤	9.0000	-1.44
12	MAXP_12	≤	1.0428	-1.47
13	RSTRENGTH_ALSI	≤	0.8284	-1.48
14	**INVtTA**	**≤**	**0.0375**	**-1.54**
15	POS_NET(-9m)	≥	5.0000	-1.54
Length = 15				

Panel E: Initial comparison level = 0 percent



1	MTB ≥ 3.58			-0.29

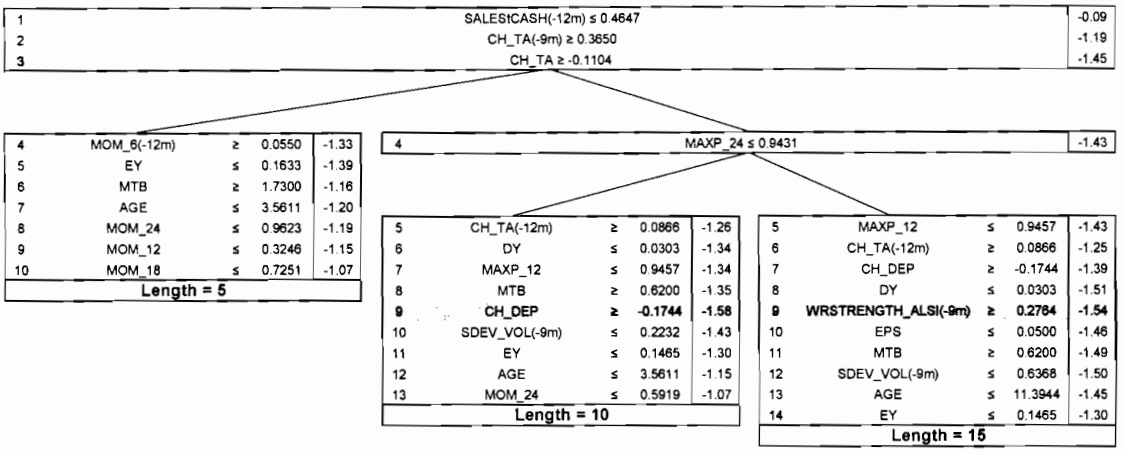
2	CH_TA(-9m)	≥	0.4125	-1.09
3	INVtTA(-12m)	≤	0.1040	-1.41
4	ROE(-9m)	≥	0.1463	-1.43
5	DY	≤	0.0203	-1.32
6	SALEStCASH(-9m)	≤	5.3979	-1.62
7	MAXP_12	≤	1.0428	-1.62
8	**MAXP_24**	**≤**	**0.9984**	**-1.63**
9	POS_NET(-12m)	≥	6.0000	-1.60
10	EY	≤	0.1129	-1.55
11	EPS	≤	1.0000	-1.47
12	CH_ARtSALES(-9m)	≥	-0.4617	-1.37
13	SALEStCASH(-12m)	≤	4.5073	-1.42
14	CH_ARtSALES(-6m)	≥	-0.3717	-1.36
15	AGE	≤	11.3944	-1.34
Length = 5				

2	CH_DEP ≥ 0.5059	-1.33
3	**INVtTA(-12m) ≤ 0.1681**	**-1.54**

4	DY	≤	0.0203	-1.22
5	CH_TA	≥	-0.1104	-1.26
6	POS_OP	≤	15.0000	-1.26
7	CH_TA(-9m)	≥	-0.0148	-1.45
8	CH_ARtSALES	≥	-0.2913	-1.44
9	RSTRENGTH_ALSI	≤	0.8284	-1.47
10	INVtTA	≤	0.0375	-1.54
11	POS_NET(-9m)	≥	5.0000	-1.54
12	MAXP_24	≤	0.8877	-1.52
13	MOM_12	≤	0.5352	-1.53
14	CH_INV	≥	-0.4171	-1.47
15	MOM_18	≤	0.3589	-1.35
Length = 10				

4	EY	≤	0.1465	-1.54
5	POS_OP	≤	15.0000	-1.44
6	DY	≤	0.0253	-1.23
7	CH_TA	≥	-0.1104	-1.27
8	AGE	≤	14.0056	-1.24
9	CH_ARtSALES	≥	-0.2913	-1.23
10	CH_TA(-9m)	≥	-0.0148	-1.44
11	POS_SALES	≤	9.0000	-1.44
12	MAXP_12	≤	1.0428	-1.47
13	RSTRENGTH_ALSI	≤	0.8284	-1.48
14	INVtTA	≤	0.0375	-1.54
15	POS_NET(-9m)	≥	5.0000	-1.54
Length = 15				

Panel F: Initial comparison level = -5 percent



By examining the first few filters in each of the above figures it is evident once again that the types of filters which are chosen in each case are quite similar. The frequent variables are considered in terms of their categories below:

(i) Valuation

As with the static comparison level tests both high market-to-book (MTB) and low earnings yield (EY) filters appear frequently. This reiterates the point that a distinguishing feature of losers is that they are overvalued both relative to their book values and their earnings.

(ii) Technical

Again technical indicators are the most prevalent category of variables in the filters combinations above. As with the valuation measures, these are mainly current rather than lagged measures.

In particular, low prices as a percentage of the 12 and 24 month highs (MAXP_12 and MAXP_24) show that loser shares experience a decline in price prior to their extreme performance. This corresponds with the historical decline in price shown in Figure 5.2. The point is further validated by low 12 month momentum filters.

Finally, the filters above again select younger companies

suggesting that these less established firms are more prone to large price declines.

(iii) Fundamental:

Profitability As in the static tests the past and current sales to cash ratios (SALEStCASH) are the only frequently appearing profitability measures.

Performance Once again low dividend yield (DY) and earnings per share (EPS) filters appear frequently in the filter combinations. However, lagged earnings growth also appears in the combinations although never within the top filters.

Leverage No leverage measures are chosen.

Liquidity Neither current nor past measures of liquidity appear to be important.

Efficiency The two distinct efficiency characteristics identified in the static comparison level tests again manifest themselves in the dynamic tests. Firstly an increased investment in total assets is apparent through high change in total assets (CH_TA) filters. Secondly, an inefficiency in working capital management, with regards to inventory and accounts receivable (INVtTA and CH_ARlSALES) in particular, exists.

(iv) Industry position

Again industry position variables appear with relative frequency. Filters tend to isolate those companies with relatively low current relative strength but which were not at the bottom companies in previous periods.

Return on equity (POS_ROE), sales growth (POS_SALES) and net margin (POS_NET) position variables are again selected often. As mentioned earlier, due to the dubious nature of these variables their inclusion or exclusion is discussed later.

7.4 Evaluation and choice of final filter combination

So far this chapter has carried out a variety of stepwise median comparison tests with a number of different parameters. Twenty four different filter combinations have resulted. This section aims to evaluate each of these filters and use the results to build a final loser filter combination.

As in Chapter 6, two evaluation metrics are used: the JK statistic and the Sharpe ratio. These two measures evaluate filter performance well as both take the following either explicitly or implicitly into account:

(i) The number of shares picked – the greater the number of shares chosen, the more statistically significant and robust the resulting model. A greater filtered sample will also imply that greater diversification is possible, and therefore this is implicitly taken into account by the Sharpe ratio through portfolio standard deviation.

(ii) The number of losers picked – since this is a study of extreme performance, the effectiveness of the filters at identifying extreme losers is important. This is implicitly taken into account in the Sharpe ratio through the inclusion of average excess returns.

(iii) The average return – in the case of a loser filter, the lower the average return the better.

(iv) Portfolio standard deviation – as with any conventional investment strategy, the lower the portfolio risk the better.

(v) Finally, although not taken into account by the Sharpe ratio, the JK statistic also considers the number of filters used. The logic behind this is that a filter combination which employs fewer filters will be fitted to the idiosyncrasies of the insample data less and will be easier to collect data for in the future.

This section continues by applying these evaluation metrics to every filter combination derived in order to determine which one filter combination is the best. This single combination is then decomposed and examined in order to determine whether it can be improved at all.

7.4.1 Choice of best filter

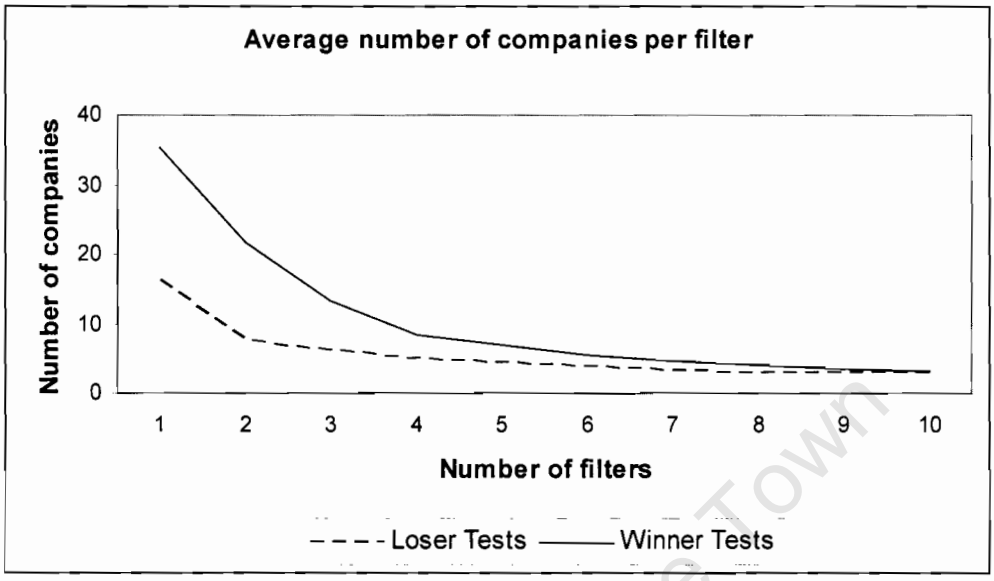
One major problem with the loser filters generated is that the resulting portfolios often contain a very low average number of companies per month. This is not as much of an issue with the winner filter combinations in Chapter 6. Figure 7.3 below illustrates this point by graphing the average number of companies held in each portfolio per month across all combinations. The graph contrasts the average effect of including additional filters in the winner and loser stepwise median comparison tests.

The graph clearly shows that in all scenarios the winner combinations yield a larger sample size. Furthermore, the number of companies included by the loser filters on average drops below ten per month within the addition of the second filter – long before enough filters have been included to yield any significant results.

This presents some major issues. Without a large sample of companies, diversification of firm-specific risk is impossible. Furthermore, a filter combination which only isolates very few companies is unlikely to be robust and applicable outside the test sample.

Figure 7.3. Average number of companies per filter

The graph below shows the number of companies per month that are included on average by the winner and loser filter combinations derived under the stepwise median comparison test. For each, the average number of companies included for one to ten filters is shown.



In light of this, the evaluation of loser filter combinations should biased towards those filter combinations which include more observations. Therefore the best loser filter combination is defined as that combination which minimizes the Sharpe ratio and the JK statistic while maintaining an average of at least ten companies per month in the filtered portfolio.

Appendix E.4. lists all those filter combinations obtained from the loser stepwise median comparison test (Appendix E.2. and E.3.) which satisfy this sample size requirement. From this appendix it is evident that the single filter combination which minimizes the Sharpe ratio more than any other eligible filter also minimizes the JK statistic. The fact that there is no disagreement between these measures indicates that its performance is robust. This filter combination is shown in Table 7.1 below:

Table 7.1. Final loser filters

The table below shows the best performing filter combination according to the Sharpe ratio and JK statistic. The average number of different companies which are held per month, the number of companies as a proportion of the sample and the number of loser observations selected over the entire sample period are also shown. The average portfolio returns and annualized monthly portfolio standard deviations are also shown. Finally, the Sharpe ratio for each portfolio as subsequent filters are added is tabulated.

	Category	Variable		Filter level	Average number of companies per month	Stocks as a proportion of sample	Number of losers	Average portfolio return	Portfolio standard deviation	Sharpe Ratio
1	Valuation	MTB	≥	2.4700	28.42	26.56%	106	8.98%	23.73%	-0.07
2	Technical	MAXP_12	≤	0.9943	24.25	22.66%	92	2.85%	23.92%	-0.33
3	Valuation	EY	≤	0.1129	21.32	19.92%	83	-0.75%	24.69%	-0.46
4	Profitability	SALEStCASH	≤	7.2024	13.47	12.59%	48	-11.95%	25.29%	-0.90
5	Technical	AGE	≤	14.0056	10.37	9.69%	48	-22.50%	25.52%	-1.30

The filter combination above reveals some interesting results. Firstly, two valuation measures are included: the filtered shares have low market-to-book (MTB) values and low earnings yields (EY). This indicates that the identified shares are highly priced relative to both their book values and their earnings.

Secondly, two technical measures are included. The share price of each company when the buy signal is received is below its past 12 month high. This indicates either that there may be a downward trend in the share price, or at least that the price is not increasing. The filter combination also excludes older companies. This may because younger companies are less established and hence prone to price shocks.

Finally, one profitability measure is included: the sales to cash (SALEStCASH) ratio. The filter includes those companies with either low levels of sales or high levels of cash. Therefore this measure takes both the profitability and the working capital management of the company into account.

7.4.2 Final filter choice

The combination identified in the previous section is a good starting point to build a final model. Since this chapter has identified a number of characteristics of loser companies and the filter rules which are constructed around them it is important to decompose this potential model and guage the impact of some alterations.

The first query which arises from inspection of the potential combination is whether two valuation measures are necessary. If it is a case of the shares of the company being overpriced, either market-to-book or earnings yield should deal well with isolating loser companies. However, if the valuation measures are at least partly capturing the effect of low earnings or a low book value, both of these measures would be necessary.

Table 7.2 below illustrates the impact of removing each of these variables. The removal of market-to-book value substantially deteriorates the effectiveness of the portfolio. Although far more companies are selected, the mean return increases significantly from -22 percent to above 1 percent resulting in a large increase in the Sharpe ratio. Similarly, the exclusion of earnings yield also raises returns and the Sharpe ratio, although by not as large a margin. Since the model weakens with the exclusion of either of these variables, both are kept in the final filter combination.

Table 7.2. Effect of valuation measures

The table below contrasts the implications of removing either market-to-book (MTB) value or earnings yield (EY) from the filter combination in Table 7.1 when applied to the period from January 2000 until December 2004. The average number of different companies which are held per month, the number of companies as a proportion of the sample and the number of loser observations selected over the entire sample period are also shown. In addition, the mean and standard deviation of portfolio returns along with the corresponding Sharpe ratio is shown.

	Original	Without MTB	Without EY
Average number of companies	10.37	20.03	11.88
Proportion of sample	9.69%	18.72%	11.11%
Total number of losers	48	61	49
Mean Return	-22.50%	1.43%	-17.11%
Standard deviation	25.52%	19.32%	22.00%
Sharpe ratio	-1.3011	-0.4820	-1.2625

The second issue revolves around MAXP_12. As mentioned earlier this variable is defined as the current share price as a percentage of the past 12 month high. Since the filter excludes observations with values greater than 100 percent for this variable it suggests that the share price is not increasing and in fact may be on a downward trend. This variable therefore seems very similar to 12 month momentum which measures the 12 month percentage change in the share price.

Since 12 month momentum has been cited in the literature as an important style factor on the JSE Securities Exchange (van Rensburg, 2001), the question which arises is whether this variable can be used instead. Table 7.3 below shows the impact of excluding MAXP_12 and instead including 12 month momentum (MOM_12). The effect of filtering momentum at every filter level used in the stepwise median comparison test is shown.

The filter results show that in all scenarios for which each of the filters selects at least four companies per month, the original filter combination achieves a lower Sharpe ratio. This is either due to a lower average excess return or a lower standard deviation. This implies that MAXP_12 is not as stringent a filter as momentum as it includes not only shares which have been following a downward trend, but also those which are simply not on an upwards trend. Due to its greater effectiveness, MAXP_12 will therefore be retained in the filter combination.

Table 7.2. Effect of momentum

The table below contrasts the implications of removing MAXP_12 from the filter combination in Table 7.1 and rather including MOM_12 when applied to the period from January 2000 until December 2004. The effect of including MOM_12 for all ten filter levels considered in the stepwise median comparison test are shown. The average number of different companies which are held per month, the number of companies as a proportion of the sample and the number of loser observations selected over the entire sample period are also shown. In addition, the mean and standard deviation of portfolio returns along with the corresponding Sharpe ratio is shown.

		MOM_12 ≤				
	Original	-0.4126	-0.3073	-0.202	-0.0966	0.0087
Average number of companies	10.37	0.85	1.97	3.25	3.58	5.15
Proportion of sample	9.69%	0.79%	1.84%	3.04%	3.35%	4.81%
Total number of losers	48	2	6	11	18	19
Mean Return	-22.50%	-52.97%	-47.86%	-43.21%	-42.26%	-30.28%
Standard deviation	25.52%	47.15%	31.99%	38.96%	39.53%	38.33%
Sharpe ratio	-1.3011	-1.3470	-1.8315	-1.3832	-1.3401	-1.0707

		MOM_12 ≤				
	Original	0.1140	0.2193	0.3246	0.4299	0.5352
Average number of companies	10.37	6.18	7.62	8.23	9.03	10.35
Proportion of sample	9.69%	5.78%	7.12%	7.69%	8.44%	9.67%
Total number of losers	48	21	25	27	33	37
Mean Return	-22.50%	-24.82%	-23.06%	-21.29%	-18.85%	-16.19%
Standard deviation	25.52%	30.42%	30.81%	25.66%	25.25%	22.30%
Sharpe ratio	-1.3011	-1.1686	-1.0978	-1.2487	-1.1726	-1.2070

The third query is whether age is necessary at all. Although found to be significant as a filter of extreme performance by Glickman et al (2001) this is still an unusual variable. The fact that older companies are excluded indicates that more established

companies are less prone to price shocks. Although logic does agree with this assertion, it is definitely not a necessary condition – one needs only to consider the number of older companies which have dropped off exchanges over the years to verify this. Therefore the effect of removing age from the filter combination is examined in Table 7.3 below.

The results clearly show that the exclusion of the age filter results in much higher average returns and hence a much larger Sharpe ratio. Therefore the inclusion of this filter is important. This finding implies that the entire filter combination focuses on the characteristics of less established extreme losers and the properties identified do not apply equally to their more established counterparts.

Table 7.3. Effect of age

The table below contrasts the implications of removing AGE from the filter combination in Table 7.1 when applied to the period from January 2000 until December 2004. The average number of different companies which are held per month, the number of companies as a proportion of the sample and the number of loser observations selected over the entire sample period are also shown. In addition, the mean and standard deviation of portfolio returns along with the corresponding Sharpe ratio is shown.

	Original	Without Age
Average number of companies	10.37	13.47
Proportion of sample	9.69%	12.59%
Total number of losers	48	48
Mean Return	-22.50%	-11.95%
Standard deviation	25.52%	25.29%
Sharpe ratio	-1.3011	-0.8967

The fourth query from the original filter combination is why no performance measures are included. From the analysis of the various filter combinations in Sections 8.1 and 8.2 it is clear that dividend yield (DY) and earnings per share (EPS) appear in the filter combinations frequently. It is therefore surprising that neither of these are included in the final filter combination.

Table 7.4 below examines the effect of adding each of these variables into the original filter combination. For each variable all ten filter levels as applied in the stepwise median comparison test are considered. For the first time a filter combination is derived which outperforms the original combination. When only shares with dividend yields less than 4.52 percent are included, the average return of the portfolio drops to

almost -24 percent, lowering the Sharpe ratio to -1.34. This is achieved with the reduction of 0.04 companies per month. The filter therefore focuses on companies which only pay small amounts of profits out as dividends, perhaps to reinvest the retained funds in struggling operations.

On the other hand, no earnings per share filters result in lower Sharpe ratios or even at least an average of ten companies per month. Therefore only the dividend yield filter is added to the original filter combination.

Table 7.4. Effect of performance measures

The table below contrasts the implications of including either DY or EPS with the filter combination in Table 7.1 when applied to the period from January 2000 until December 2004. The effect of including each of theses for all ten filter levels considered in the stepwise median comparison test are shown. The average number of different companies which are held per month, the number of companies as a proportion of the sample and the number of loser observations selected over the entire sample period are also shown. In addition, the mean and standard deviation of portfolio returns along with the corresponding Sharpe ratio is shown. Panel A shows the results when DY is included and Panel B shows the results when EPS is included.

Panel A: Inclusion of dividend yield

		DY ≤				
	Original	0.0003	0.0053	0.0103	0.0153	0.0203
Average number of companies	10.37	5.32	5.52	6.25	7.13	8.13
Proportion of sample	9.69%	4.97%	5.16%	5.84%	6.67%	7.60%
Total number of losers	48	42	43	44	44	47
Mean Return	-22.50%	-36.08%	-36.28%	-36.30%	-31.14%	-31.17%
Standard deviation	25.52%	33.71%	34.02%	33.96%	30.43%	29.49%
Sharpe ratio	-1.3011	-1.3790	-1.3724	-1.3768	-1.3715	-1.4176

		DY ≤				
	Original	0.0253	0.0303	0.0352	0.0402	0.0452
Average number of companies	10.37	9.40	9.65	9.95	10.32	10.33
Proportion of sample	9.69%	8.79%	9.02%	9.30%	9.64%	9.66%
Total number of losers	48	48	48	48	48	48
Mean Return	-22.50%	-27.88%	-26.28%	-25.36%	-23.77%	-23.73%
Standard deviation	25.52%	28.04%	27.70%	27.14%	25.71%	25.65%
Sharpe ratio	-1.3011	-1.3740	-1.3324	-1.3281	-1.3412	-1.3429

Panel B: Inclusion of earnings per share

		EPS ≤				
	Original	-0.3300	-0.1400	0.0500	0.2400	0.4300
Average number of companies	10.37	0.00	0.00	1.60	3.73	5.05
Proportion of sample	9.69%	0.00%	0.00%	1.50%	3.49%	4.72%
Total number of losers	48	0	0	11	23	37
Mean Return	-22.50%	-	-	-21.56%	-25.46%	-34.28%
Standard deviation	25.52%	-	-	64.92%	41.16%	36.23%
Sharpe ratio	-1.3011	-	-	-0.4833	-0.8653	-1.2307

		EPS ≤				
	Original	0.6200	0.8100	1.0000	1.1900	1.3800
Average number of companies	10.37	6.20	6.65	7.27	7.38	7.90
Proportion of sample	9.69%	5.79%	6.21%	6.79%	6.90%	7.38%
Total number of losers	48	37	41	46	46	46
Mean Return	-22.50%	-29.82%	-30.36%	-30.09%	-29.40%	-28.35%
Standard deviation	25.52%	33.53%	32.37%	31.22%	30.86%	30.37%
Sharpe ratio	-1.3011	-1.1994	-1.2592	-1.2972	-1.2895	-1.2763

The fifth issue with the filter combination under inspection is why no efficiency measures have been selected. The analysis earlier in the chapter indicates that efficiency ratios, and particularly change in total assets (CH_TA), appear frequently in filter combinations. In order to test whether this variable adds any value to the filter combination constructed so far, Table 7.5 below shows the impact of its inclusion. The impact is shown for all ten filter levels as used in the stepwise median comparison test.

This table clearly shows that none of the filters considered decrease the Sharpe ratio or even include as few as ten companies per month on average. Therefore the change in total assets filter is not included. This suggests that either those companies which increase their holdings of assets display other characteristics which are captured by the remaining filters, or the best performing filter combination focuses on an entirely different sample of poor performers.

Table 7.5. Effect of change in total assets

The table below shows the impact of adding CH_TA to the filter combination in Table 7.1 when dividend yield has been included as well. The results apply to the period from January 2000 until December 2004. The effect of including CH_TA for all ten filter levels considered in the stepwise median comparison test are shown. The average number of different companies which are held per month, the number of companies as a proportion of the sample and the number of loser observations selected over the entire sample period are also shown. In addition, the mean and standard deviation of portfolio returns along with the corresponding Sharpe ratio is shown.

	Original with DY	CH_TA ≥				
		-0.1104	-0.0533	0.0038	0.0609	0.1180
Average number of companies	10.33	8.30	8.30	7.88	7.27	6.92
Proportion of sample	9.66%	7.76%	7.76%	7.37%	6.79%	6.46%
Total number of losers	48	41	41	30	30	30
Mean Return	-23.73%	-24.00%	-24.00%	-19.88%	-20.32%	-21.71%
Standard deviation	25.65%	33.72%	33.72%	32.54%	32.65%	33.05%
Sharpe ratio	-1.3429	-1.0324	-1.0324	-0.9439	-0.9549	-0.9860

	Original with DY	CH_TA ≥				
		0.1751	0.2322	0.2893	0.3464	0.4036
Average number of companies	10.33	6.17	5.62	5.17	4.93	4.25
Proportion of sample	9.66%	5.76%	5.25%	4.83%	4.61%	3.97%
Total number of losers	48	30	26	26	26	24
Mean Return	-23.73%	-24.28%	-28.09%	-33.07%	-33.28%	-36.37%
Standard deviation	25.65%	33.37%	32.54%	33.00%	33.32%	34.98%
Sharpe ratio	-1.3429	-1.0545	-1.2012	-1.3346	-1.3262	-1.3452

The final consideration is why no position variables have been included. However, as mentioned in Chapter 6 and earlier in this chapter, these variables may not portray the

best signals. This is because they are derived for each company relative to the attributes of other companies in the same economic group. These economic groups may contain a diverse range of companies, though. For this reason no position variables are included for further analysis, although future research could focus on creating these variables based on more economically justifiable industry definitions.

Table 7.6 below summarizes the variables chosen above. The excellent performance of this final filter combination is also clearly illustrated in this table. As can be seen the final portfolio earns a average return of -23.73 percent and has a portfolio standard deviation of 25.65 percent. These excellent statistics result in a Sharpe ratio of -1.34. There is also a reasonable size holding under the portfolio, implying that a certain degree of diversification is possible. A list of shares picked by this filter, along with their buy dates and resulting 12 month return are shown in Appendix E.5.

Table 7.6. Final loser filters

The table below shows the final combination of filters chosen. The average number of different companies which are held per month, the number of companies as a proportion of the sample and the number of loser observations selected over the entire sample period are also shown. The average portfolio returns and annualized monthly portfolio standard deviations are also shown. Finally, the Sharpe ratio for each portfolio as subsequent filters are added is tabulated.

	Category	Variable		Filter level	Average number of companies per month	Stocks as a proportion of sample	Number of losers	Average portfolio return	Portfolio standard deviation	Sharpe Ratio
1	Valuation	MTB	≥	2.4700	28.42	26.56%	106	8.98%	23.73%	-0.07
2	Technical	MAXP_12	≤	0.9943	24.25	22.66%	92	2.85%	23.92%	-0.33
3	Valuation	EY	≤	0.1129	21.32	19.92%	83	-0.75%	24.69%	-0.46
4	Profitability	SALEStCASH	≤	7.2024	13.47	12.59%	48	-11.95%	25.29%	-0.90
5	Technical	AGE	≤	14.0056	10.37	9.69%	48	-22.50%	25.52%	-1.30
6	Performance	DY	≤	0.0452	10.33	9.66%	48	-23.73%	25.65%	-1.34

7.5 Comparison to stepwise Sharpe maximization procedure

As in Chapter 6, an alternative to the stepwise median comparison procedure is to apply a similar stepwise framework, but instead to add the subsequent filter which maximizes the Sharpe ratio. This section contrasts the results obtained from a stepwise Sharpe maximisation procedure to the findings of this chapter in order to determine whether this method is in fact better or not. Table 7.7 below shows the filter combination generated from this process.

Table 7.7. Results of stepwise Sharpe maximisation procedure

The table below shows the filter combination selected by the stepwise Sharpe maximisation procedure, and the resulting Sharpe ratio resulting from the addition of each filter. The table also shows the average number of companies held per month resulting from the addition of each filter. The number of companies held as a proportion of the total sample is also shown along with the number of loser observations selected over the entire sample period. The average portfolio returns and annualized monthly portfolio standard deviations are also shown. The filter which minimizes the Sharpe ratio is highlighted.

Sharpe Ratio	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation
-0.29	MTB	≥	3.5800	49.70	1728.33%	77	1.88%	30.21%
-1.35	CH_DEP	≥	0.5910	32.35	520.00%	33	-27.47%	28.48%
-1.33	CH_TA(-9m)	≥	0.3650	5.15	263.33%	25	-54.54%	49.08%
-1.32	DY	≤	0.0203	4.32	200.00%	25	-61.40%	54.83%
-1.43	RSTRENGTH_ALSI	≤	0.8284	1.95	170.00%	23	-66.15%	54.10%
-1.44	POS_NET(-9m)	≥	5.0000	1.02	151.67%	23	-67.49%	54.74%
-1.45	CH_TA	≥	-0.1104	0.87	131.67%	23	-68.39%	54.89%
-1.46	MAXP_24	≤	0.9431	0.85	131.67%	22	-67.77%	54.32%
-1.45	CH_ARtSALES	≥	-0.2913	0.83	130.00%	21	-67.54%	54.27%
-1.48	POS_OP	≤	11.0000	0.78	160.00%	20	-66.71%	52.91%
-1.52	**EPS**	**≤**	**1.1900**	**0.57**	**118.33%**	**19**	**-67.01%**	**51.65%**
-1.47	ACCtTA(-12m)	≤	-0.0003	0.55	111.67%	18	-67.30%	53.51%
-1.36	EARNG_12(-9m)	≥	-0.0180	0.53	91.67%	17	-67.94%	58.33%
-1.37	VRSTRENGTH_ALSI(-9m	≥	0.1548	0.52	91.67%	16	-68.46%	58.22%
-1.36	INVtTA(-12m)	≤	0.0078	0.50	86.67%	15	-69.08%	59.05%

Figure 7.4 below compares the Sharpe ratios of the stepwise median comparison and Sharpe maximisation procedures. Since only six final filters are derived under the median comparison test, values for the Sharpe ratio are only available up to this point. At first glance it appears that the Sharpe maximisation procedure far outperforms the original technique as the Sharpe ratio is always lower.

Once again, however, the analysis changes slightly when the average number of companies selected per month under each strategy is considered, as shown in Figure 7.5. This graph shows that the median comparison method again selects more companies, particularly as a the number of filters included is increased. In fact with the addition of the fourth filter, the number of companies selected per month by the Sharpe method drops below five, while it remains around 15 for the original technique. This larger sample size may therefore more than compensate for the marginally higher Sharpe ratios. Both of these combinations are tested on the independent sample in Chapter 8 to verify which is in fact better.

Figure 7.4. Comparison of Sharpe ratios between stepwise methodologies

The graph below compares the Sharpe ratios attained by the stepwise median comparison and Sharpe maximisation procedures, with the addition of subsequent filters.

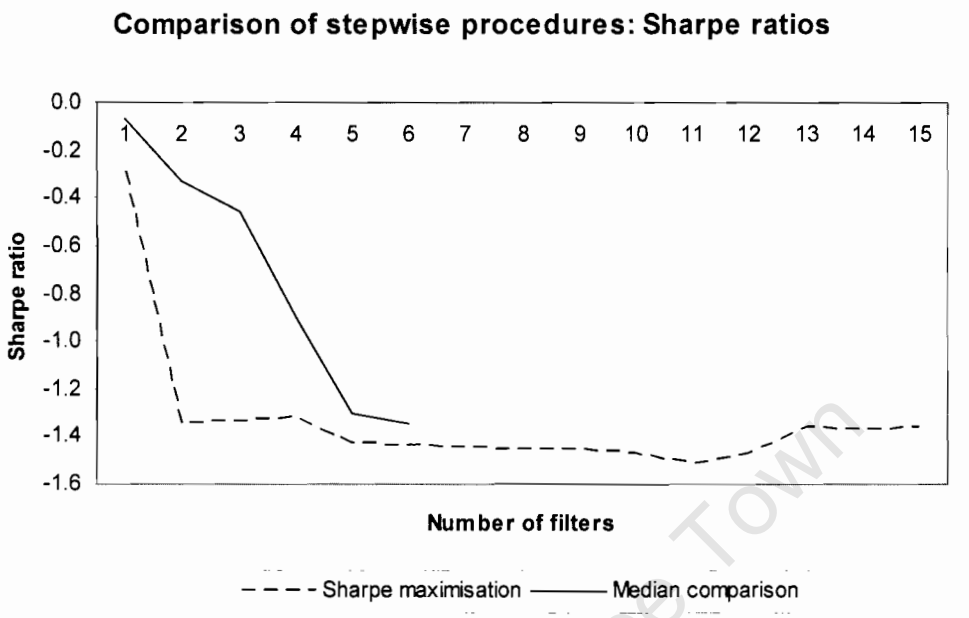
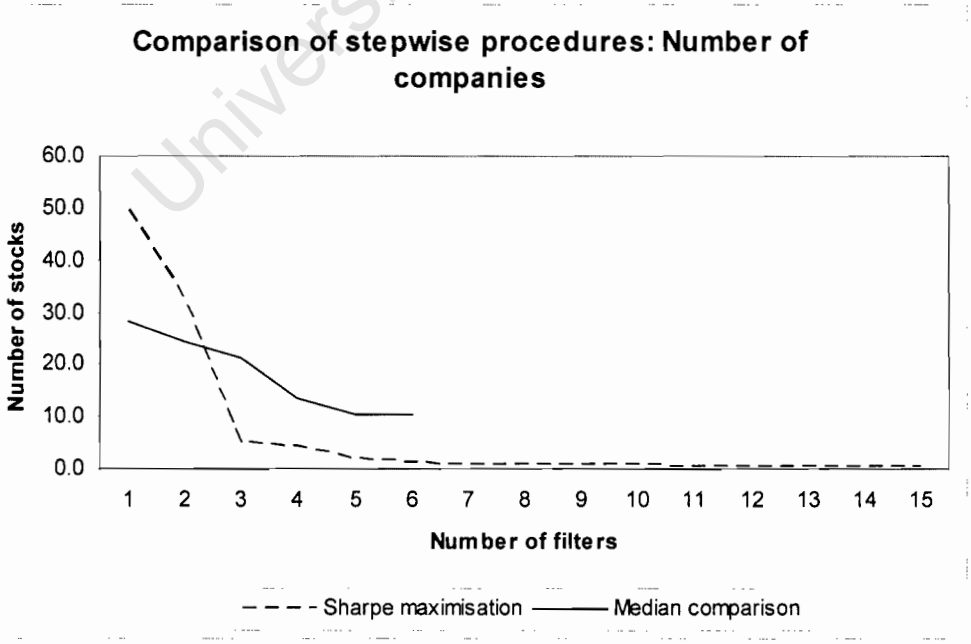


Figure 7.5. Comparison of number of companies between stepwise methodologies

The graph below compares the average number of companies selected per month by the stepwise median comparison and Sharpe maximisation procedures, with the addition of subsequent filters. The graph clearly illustrates that the median comparison procedure outperforms the alternative.



7.6 Summary and Conclusion

This chapter applies the same methodology derived in Chapter 6 to build a loser filter combination: the stepwise median comparison test based on the Wilcoxon signed ranks sum test. Once again the procedure is applied over the five year period from January 2000 until December 2004 using the relative median technique for determining possible filter values for each variable.

The stepwise median comparison test is then repeatedly run, each time altering the comparison level in the Wilcoxon signed ranks test. This comparison level is first set at a static level between 20 and -5 percent for each included filter. A second set of tests then considers a dynamic comparison level, starting between 20 and -5 percent and gradually decreasing to -50 percent over either five, ten or fifteen filters. The results are analysed and amalgamated with careful consideration for the effect of each filter on the Sharpe ratio, JK statistic and sample size. The product of this process is a set of six filters, termed the final loser filter combination.

Finally, this combination is compared to the results from a simpler stepwise Sharpe maximisation procedure which results in only one solution. Although the original combination does not outperform this alternative in terms of Sharpe ratio, it does result in a significantly larger sample size. The resultant portfolios are contrasted in an independent sample in Chapter 8.

-8-

Out of Sample Testing

8.1 Introduction

Chapters 6 and 7 apply a stepwise median comparison methodology to a test sample in order to derive a final winner and a loser filter combination respectively. In addition, these chapters conduct a stepwise Sharpe maximisation procedure in order to determine another potential combination for winners and losers.

This chapter considers the effectiveness of each of these two alternatives for winners and losers when applied to an independent sample. In particular, the absolute return characteristics of each are contrasted in order to determine which option is better. Thereafter, the superior alternative is adjusted for risk and decomposed into various style characteristics.

The chapter continues as follows: Section 8.2 provides an overview of the risk-adjustment procedures applied in this chapter. In addition, this section outlines the underlying assumptions of the Classical Linear Regression Model used in order that these requirements can be verified later.

Section 8.3 evaluates the winner portfolio. The absolute return patterns of the stepwise median and Sharpe maximisation filter combinations are compared. The superior alternative is then adjusted for risk. The assumptions of the CLRM are tested and the results discussed. Finally, this portfolio is decomposed into its Findi-Resi classification, and its size, momentum and earnings yield characteristics are considered. Section 8.4 conducts a similar procedure with the loser portfolio. Section 8.5 summarises and concludes the chapter.

8.2 Risk-Adjustment Procedures and Assumptions

It is not sufficient to consider the absolute returns on a portfolio as large returns might simply be a compensation for high risk. It is therefore necessary to adjust these returns for risk. This section briefly outlines the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT) model, used for risk-adjustment in this chapter. In practice, since the APT model is run in the form of a multiple regression, the underlying assumptions of this procedure are also outlined.

8.2.1 The CAPM

Two types of risk are relevant in the context of the CAPM there: firm-specific (unsystematic) and systematic risk. Markowitz (1959) shows that it is possible to earn higher returns for the same levels of risk by including non-perfectly correlated assets. These assets tend to diversify away unsystematic risk, exposing the portfolio only to market-related risk. As all rational investors are expected to diversify, they are only rewarded for baring systematic risk.

The CAPM estimates the expected return on a portfolio for a certain level of systematic risk, a particular expected market return and variation, and a given risk-free rate. The systematic risk of the portfolio is represented by its beta, or covariance with the market standardized by expected variance of the market portfolio's returns. The CAPM is ultimately measures ex ante (expected) returns. However, in order to estimate the model, ex post (realised) returns are employed. When moving from realised to expected returns, the Single-index model is used:

$$(r_p - r_f) = \alpha + \beta_{ALSI}(r_{ALSI} - r_f) + e \qquad (8.1)$$

Where α is the abnormal return of the portfolio

r_f is the annual risk-free rate

r_{ALSI} is the annual return on the market

β_{ALSI} is the sensitivity of portfolio returns to market returns

e is a random error term

If the regression returns a significantly positive abnormal return (alpha) it means that the portfolio outperforms the market in risk-adjusted returns. Similarly, if the regression returns a significantly negative abnormal return, this shows that the portfolio underperforms the market in risk-adjusted returns.

8.2.2 The APT

As discussed in Chapter 2, there are many flaws with the traditional Capital Asset Pricing Model which have motivated researchers to search for more effective asset pricing models. Much literature has found that a two-factor APT model with the Resources index and the Financial-industrial index as the factors performs best in a South African context (van Rensburg, 1998). The form of this model is shown in Equation 2.1.

In terms of the two-factor APT, all portfolio returns should be explained by the portfolio's systematic risk. Therefore any returns in excess of this are not explained by the portfolio's factor risk. Instead either the portfolio offers high risk-adjusted returns or the factors employed by the APT model do not fully capture the risk.

A multiple regression is run, regressing the excess returns on the portfolio against the excess returns on the Findi and the Resi:

$$(r_p - r_f) = \alpha + \beta_{RESI}(r_{RESI} - r_f) + \beta_{FINDI}(r_{FINDI} - r_f) + e \qquad (8.2)$$

Where α is the abnormal return of the portfolio

r_f is the annual risk-free rate

r_{RESI} is the annual return on the resources index

r_{FINDI} is the annual return on the financial-industrial index

β_{RESI} is the sensitivity of portfolio returns to Resi returns

β_{FINDI} is the sensitivity of portfolio returns to Findi returns

e is a random error term

If the regression returns a significantly positive abnormal return (alpha) it means that the portfolio outperforms the market in risk-adjusted returns. Similarly, if the regression returns a significantly negative abnormal return, this shows that the portfolio underperforms the market in risk-adjusted returns.

8.2.3 CLRM assumptions

A Classical Linear Regression Model (CLRM) is used to build the APT model. As with any statistical procedure there are a number of assumptions involved. These assumptions about the independent variables and the error term of the model are extremely critical to the valid interpretation of the regression estimates. There are ten underlying assumptions in the CLRM (Gujarati, 1995):

(i) The regression model is linear in the parameters.

(ii) The values of the independent variables are fixed in repeated sampling; they are nonstochastic.

(iii) The mean or expected value of the random disturbance term (e_i) is zero.

(iv) The error term is homoscedastic, meaning that its variance is constant.

(v) There is no autocorrelation between the disturbance terms.

(vi) There is no covariance between the error terms and the independent variables. According to Gujurati (1995) this is automatically fulfilled if the independent variables are nonstochastic.

(vii) The number of observations on which the model is based must be greater than the number of parameters to be estimated.

(viii) There is variability in the values of the independent variables.

(ix) The regression model is correctly specified. This is one of the most contentious assumptions in relation to asset pricing models. As mentioned in Chapter 2, the joint hypothesis problem states that it is impossible to conclude whether anomalies in stock markets are caused by inefficiences or by misspecifications in the risk-adjustment models used.

(x) There is no perfect multicollinearity between the independent variables.

The above assumptions ensure that the regression yields the best linear unbiased estimators. However, in order to conduct hypothesis tests, an idea about the

distribution of the error terms is needed. In light of this a further assumption is imposed: that the error variables are normally distributed with a zero mean and constant variance (Gujurati, 1995).

Finally, since time series regressions are conducted, the variables are required to be stationary (Gujurati, 1995). A time series is stationary if its mean and variance do not systematically vary over time. If this assumption is violated, spurious regressions may result.

Care is taken to ensure that these assumptions are met in order that the results obtained in this chapter are reliable and interpretable.

8.3 Winner Portfolio

This section applies the winner filters derived in Chapter 6 to the independent sample. It begins by considering the absolute returns of this portfolio and the return pattern over time. It then continues by applying the risk-adjustment procedures of Section 8.1 in order to determine whether the high returns of this portfolio are simply explained by the risk inherent in the portfolio. Next a breakdown of the portfolio into the Resources and the Financial-industrial index is conducted in order to further explain the results. Finally, a number of style factors and characteristics of the winner portfolio are examined.

8.3.1 Absolute returns

A full list of companies selected in the independent sample is shown in Appendix F.1. Table 8.1 below contrasts the return characteristics of the winner portfolios selected by the stepwise median comparison procedure and the stepwise Sharpe maximization procedure. It is clear that the former provides far superior performance in terms of a number of measures. Not only does the median comparison technique select substantially more companies, but it also results in a higher average return of just under 50 percent and a lower standard deviation. These differences result in a

significantly higher Sharpe ratio of 1.6 as opposed to the 0.69 of the Sharpe maximization portfolio. This results partly from the fact that over 20 percent of the companies chosen are extreme winners. Due to its superior performance, only the median comparison procedure is considered for the remainder of this section.

Table 8.1. Winner portfolio summary statistics

The table below contrasts the performance of the stepwise median comparison and Sharpe maximisation techniques of Chapter 6 on the independent sample. The table shows the breakdown of sample size in terms of average number of companies per month, proportion of the total sample held and total number of winners (out of a possible 919). The performance of the portfolio is summarized by the mean, median, maximum and minimum annual return of the portfolio. In addition it shows the standard deviation of the portfolio returns and the resulting Sharpe ratio.

	Median Comparison	Sharpe maximisation
Average number of companies	8.58	1.22
Proportion of sample	8.10%	1.15%
Number of winners	52.0	4
Mean return	50.35%	37.98%
Median return	39.48%	17.01%
Standard deviation	24.52%	38.48%
Maximum return	365.22%	365.20%
Mininimum return	-61.02%	-25.69%
Sharpe ratio	1.60	0.69

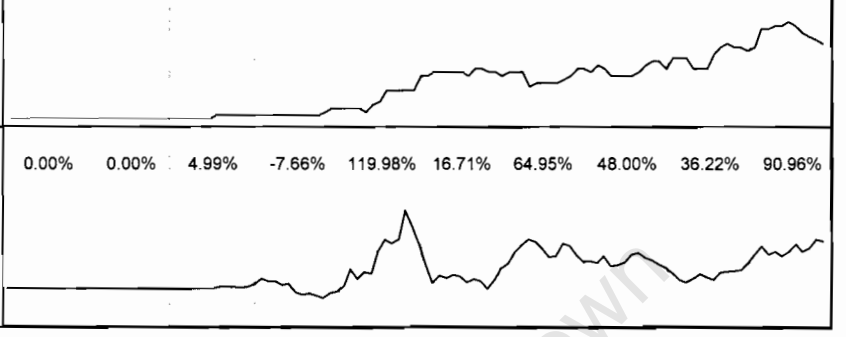
Table 8.2 shows the return patterns of the median comparison portfolio over time. Prior to July 1997 no companies are included by the filter rules. This is not a surprising result, however, as the filters are derived from a sample period from the beginning of 2000 until the end of 2004. The number of companies included in the sample increases consistently over time, always averaging above ten companies per month over the last five years of the sample. This reasonable sample size implies that a limited degree of diversification of firm-specific risk is possible.

The returns on average are high in most years of the sample, with the exception of 1997 and 1998. This may simply be due to the small amount of holdings and the inapplicability of the model in the earlier years of the sample. Furthermore, although still positive, returns are relatively lower for the portfolio in 2000. However, this corresponds to a period when the entire market suffered. Otherwise returns are consistently high in the last five years of the sample which corresponds with the period for which the filter rules were derived in the test sample.

Table 8.2. Winner portfolio calendar time payoffs

The table shows the equally-weighted average return over a rolling 12-month period resulting from the winner portfolio in each year of the sample. The table also shows the average number of company included in the portfolio per month. In addition, monthly values for each of these measures are plotted over time.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Average number of companies	0.00	0.00	0.50	1.25	5.25	12.92	11.42	13.67	17.17	23.67
Average Return	0.00%	0.00%	4.99%	-7.66%	119.98%	16.71%	64.95%	48.00%	36.22%	90.96%

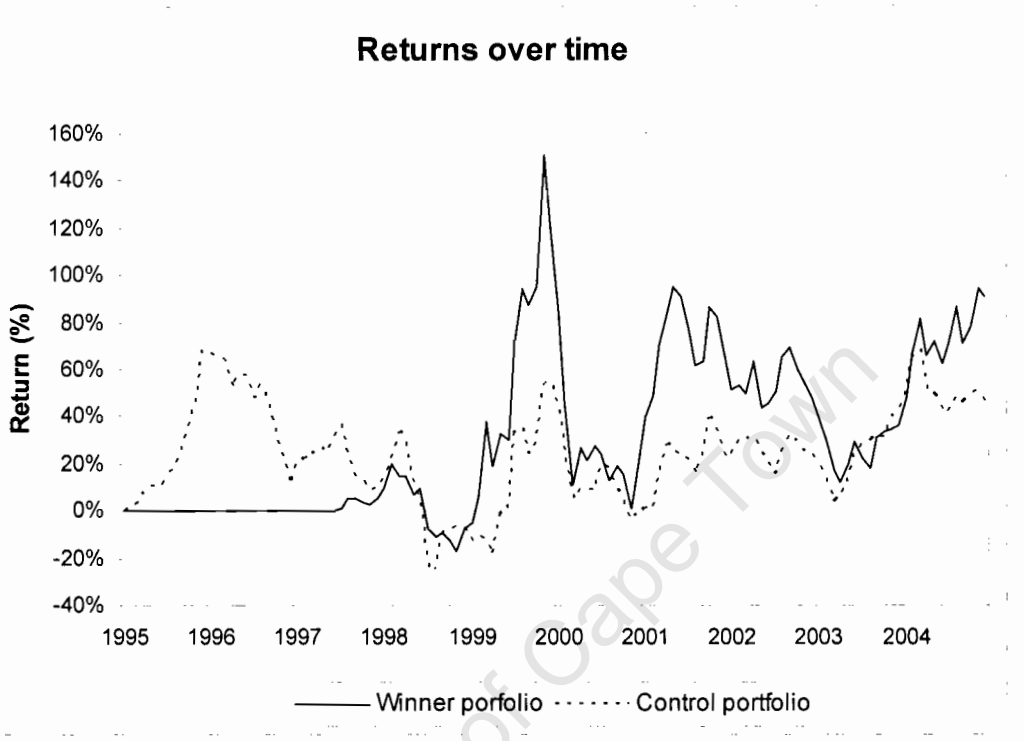


The equally weighted average returns over a rolling twelve month period are graphically compared to the corresponding returns on an equally weighted portfolio of all shares in the independent sample in Figure 8.1 below. This graph shows that although the return pattern is similar between the two portfolios, the winner portfolio outperforms its benchmark over most of the period. Only during the beginning of the sample, when little data is available, does the portfolio not outperform.

Furthermore, the returns on the winner portfolio are compared to the Resources index and the Financial-industrial index in Appendix F.2. Although these two indexes are not directly comparable as benchmarks as they are market value- as opposed to equally-weighted, they still give an indication of the performance of the portfolio. Once again the return pattern is very similar, and the selected portfolio outperforms its counterparts over most of the sample.

Figure 8.1. Winner portfolio average returns over time

The figure graphs the equally weighted average return over a rolling 12 month period earned by the winner portfolio in each year of the sample from 1995 until 2004. On the same axes, the graph also shows the return of an equally-weighted portfolio of all shares in the independent sample over the identical period.



However, the large returns experienced by the winner portfolio may merely be compensation for a large degree of systematic risk in the portfolio. It is therefore necessary to adjust these returns for the inherent risk of the portfolio. This task is approached in the next section.

8.3.2 Risk-adjusted returns: CAPM

As shown in the previous section, the filter rule does not select any shares prior to July 1997. The average number of companies selected per month remains low until the last five years of the sample. This result is explained by the fact that the filters are derived over the period from January 2000 until December 2004. In light of this, the regression is run over the same five year period. A summary of the output for the model is shown in Table 8.3 below:

Table 8.3. CAPM regression output

The table shows some of the output for the regression of the monthly excess winner portfolio returns against the excess returns on the Alsi over the period from January 2000 until December 2004. The table shows the values and t-tests of the various coefficients as well as measures of the strength of the model.

Variable	Coefficient	t-Statistic	Prob.
α	0.0254	3.2633	0.0018
$r_{ALSI} - r_f$	0.2747	3.6216	0.0006
R-squared	0.1844		
Adjusted R-squared	0.1704		
F-statistic	13.1158		
Prob(F-statistic)	0.0006		

Three measures are presented to evaluate the strength of the regression. Firstly, the coefficient of determination[4], or R-squared, shows that more than 18 percent of the variability in portfolio excess returns is explained by variability in Alsi excess returns. Secondly, the coefficient of determination adjusted for degrees of freedom[5], or adjusted R-squared, is similar to the previous measure except that it is adjusted to account for the sample size and the number of independent variables. It is interpreted similarly to its unadjusted counterpart: more than 17 percent of the variation in portfolio returns is explained by variation in the independent variables. This indicates that the model is a reasonable fit.

[4] $$R^2 = 1 - \frac{SSE}{\sum (y_i - \bar{y})^2} \quad (8.3)$$

where $$SSE = \sum_{i=1}^{n} (y_i - \hat{y}_i)^2 \quad (8.4)$$

y_i is i^{th} observed value of the dependent variable
$\hat{y}_i$ is the i^{th} predicted value for the dependent variable
$\bar{y}$ is the mean value of the dependent variable

[5] $$\text{Adjusted } R^2 = 1 - \frac{SSE/(n-k-1)}{\sum (y_i - \bar{y})^2/(n-1)} \quad (8.5)$$

where n is the sample size
k is the number of independent variables

Thirdly, a large F-statistic[6] indicates that most of the variation in the dependent variable is explained by the regression equation. Since the F-statistic is 13.11 and the corresponding p-value is almost zero, the null hypothesis that all of the parameters are equal to zero can be rejected with an extremely high level of confidence. Therefore there is a great deal of evidence to infer that the model is valid.

Each of the coefficients produced by the model also reveal a great deal of information. Firstly, the intercept term (alpha) of the model is extremely significant with a t-statistic[7] of -3.26 and a p-value of almost zero. Therefore this estimate can be interpreted. The monthly alpha of 2.54 percent translates into an annual alpha of 35.12 percent[8], an incredibly large risk-adjusted return. Alternatively this may be a result of a misspecified asset pricing model which does not fully capture the risk inherent in the portfolio. The beta on the All-share index is also highly significant and implies that winner portfolio moves by 27 cents for every Rand move in the index.

8.3.3 Risk-adjusted returns: APT

As mentioned in Section 8.1, the two-factor APT with the Resi and the Findi as the factors is a superior risk-adjustment model. This section begins running this model and interpreting the results. Any violations of the underlying assumptions are then considered.

8.3.3.1 Regression and interpretation

[6] $$F = \frac{\left(\sum (y_i - \bar{y})^2 - SSE\right)/k}{SSE/(n-k-1)} \qquad (8.6)$$

[7] $$t = \frac{b_i - \beta_i}{s_{b_i}} \qquad (8.7)$$

where $$s_{b_i} = \frac{\sqrt{SSE/(n-2)}}{\sqrt{(n-1)s_x^2}} \qquad (8.8)$$

b_i is the estimated coefficient
β_i is the hypothesized value (0)
s_x^2 is the sample variance of the dependent variable

[8] Annualized $\alpha = (1+\alpha)^{12} - 1$

As shown in the Section 8.3.1, the filter rule does not select any shares prior to July 1997 and selects very few prior to 2000. As in the previous section, the regression is therefore conducted over the five year period from January 2000 until December 2004. A summary of the output for the model is shown in Table 8.4 below:

Table 8.4. Two-factor APT regression output

The table shows some of the output for the regression of the monthly excess winner portfolio returns against the excess returns on the Findi and the Resi over the period from January 2000 until December 2004. The table shows the values and t-tests of the various coefficients as well as measures of the strength of the model.

Variable	Coefficient	t-Statistic	Prob.
α	0.0281	4.4825	0.0000
$r_{RESI} - r_f$	0.1324	1.5826	0.1190
$r_{FINDI} - r_f$	0.4707	3.5126	0.0009
R-squared	0.3317		
Adjusted R-squared	0.3083		
F-statistic	14.1482		
Prob(F-statistic)	0.0000		

The same three measures are presented to evaluate the strength of the regression. Firstly, the coefficient of determination, or R-squared, shows that more than 33 percent of the variability in portfolio excess returns is explained by variability in Findi and Resi excess returns. Secondly, the coefficient of determination adjusted for degrees of freedom, or adjusted R-squared, shows that more than 30 percent of the variation in portfolio returns is explained by variation in the independent variables. This indicates that the model is a reasonable fit.

Thirdly, since the F-statistic is 14.14 and the corresponding p-value is almost zero, the null hypothesis that all of the parameters are equal to zero can be rejected with an extremely high level of confidence. Therefore there is a great deal of evidence to infer that the model is valid. All of these evaluation statistics are significantly higher for this regression than for the CAPM, reiterating the greater applicability of the two-factor APT.

Each of the coefficients produced by the model also reveal a great deal of information. Firstly, the intercept term (alpha) of the model is extremely significant with a t-

statistic of 4.48 and a p-value of almost zero. Therefore this estimate can be interpreted. This monthly alpha of 2.81 percent translates into an annual alpha of 39.45 percent, implying that the portfolio earns phenomenal abnormal returns in risk-adjusted terms. Alternatively this may be a result of a misspecified asset pricing model which does not fully capture the risk inherent in the portfolio. This result is more consistent with intuition than those of the CAPM.

The beta on the Financial-industrial index is also highly significant and implies that winner portfolio moves by 47 cents for every Rand move in the index. It is surprising that this beta is less than unity as one would expect that in order to earn potentially higher returns it would be necessary to take on more systematic risk. Since the beta on the Resources index is not significant at the 10 percent level, it cannot be interpreted. This insignificance is investigated later in this chapter.

8.3.3.2 Validation of assumptions

As mentioned in Section 8.1, a number of assumptions are involved in CLRM. It is therefore necessary to validate these assumptions. In particular, the assumptions of normality, no autocorrelation and homoscedasticty of the residuals are considered. Furthermore, the assumption of no multicollinearity between independent variables is tested.

(i) Normality

Appendix F.3. contains a histogram of the residuals from the regression. It is clear from this graph that the residuals are approximately normally distributed. In order to confirm this a more formal test for normality, the Jarque-Bera test for normality[9] is used (Jarque and Bera, 1987). Since a normally distributed variable has a skewness of zero and a kurtosis of three, the Jarque-Bera test confronts the joint hypothesis that skewness and kurtosis are equal to these values respectively. The high p-value for this

[9] $$JB = n\left[\frac{S^2}{6} + \frac{(K-3)^2}{24}\right] \qquad (8.9)$$

where n is the sample size
S is the skewness coefficient
K is the kurtosis coefficient
The JB statistic asymptotically follows the chi-squared distribution with 2 degrees of freedom.

test of 0.74 (shown in Appendix F.3.) indicates that the null hypothesis of normality cannot be rejected.

(ii) Autocorrelation

Once again two methods are used to test for autocorrelation, the results of which are presented in Appendix F.4. Informally, the residuals are plotted over time to inspect whether any patterns emerge. No pattern appears to be evident from this graph. More formally, the Ljung-Box (LB) statistic[10] is used (Ljung and Box, 1978). This test lags the residuals by k periods and regresses them against unlagged residuals to determine if any autocorrelation exists. The process iterates through lag lengths ranging from one to 28 months. The output in Appendix F.4. shows that the LB-statistics are so large in every one of these lags that a p-value of zero results in each case. Therefore the null hypothesis of the existence of autocorrelation can always be rejected.

(iii) Heteroscedasticity

The next assumption is that the variance of the error terms is constant, or homoscedastic. Appendix F.5. presents the results for a simple graphical method. The residuals are plotted against the predicted values of the dependent variable in order to determine if there is some pattern in variance as the magnitude of the predicted value increases. From inspection of this scatterplot no pattern seems present.

Secondly, the more formal White's general heteroscedasticity test is conducted (White, 1980). This test begins by regressing the residuals of the original regression in an auxiliary regression of the form:

$$\hat{u}_i^2 = \alpha_1 + \alpha_2(Resi_i - r_f) + \alpha_3(Findi_i - r_f) + \alpha_4(Resi_i - r_f)^2 + \alpha_5(Findi_i - r_f)^2 + \alpha_6(Resi_i - r_f)(Findi_i - r_f) + v_i$$

[10] $$LB = n(n+2)\sum_{k=1}^{m}\left(\frac{\hat{\rho}_k^2}{n-k}\right) \sim \chi^2 m \qquad (8.10)$$

where $\hat{\rho}_k^2$ is the sample autocorrelation function:

$$\hat{\rho}_k^2 = \frac{\left(\sum (Y_t - \bar{Y})(Y_{t+k} - \bar{Y})\right)/n}{\left(\sum (Y_t - \bar{Y})^2\right)/n} \qquad (8.11)$$

n is the sample size
m is the lag length
Y_t is the observed value at time t
$\bar{Y}$ is the sample mean
The LB statistic asymptotically follows the chi-squared distribution with m degrees of freedom.

It can be shown the that the product of the sample size, n, and the coefficient of determination from this auxiliary regression is asymptotically chi-squared distributed with degrees of freedom equal to the number of regressors[11]. If this test statistic does exceeds the critical chi-squared value at the relevant significance level, the null hypothesis of homoscedasticity can be rejected. In the case of this regression, a test statistic of 3.24 and corresponding p-value of 0.66 implies that no heteroscedasticity is present.

(iv) Multicollinearity

In order to test whether multicollinearity is a problem in multiple regressions, Gujarati (1995) suggests a simple rule of thumb: if the pairwise correlations between two independent variables is greater than 0.8, this may be sufficient to conclude that multicollinearity exists. The correlation coefficient between excess returns on the Financial-industrial index and the Resources index is only 0.52. Therefore no multicollinearity is present.

Since it appears that none of the CLRM assumptions have been violated it is safe to conclude that the regression above is valid and the interpretations justified.

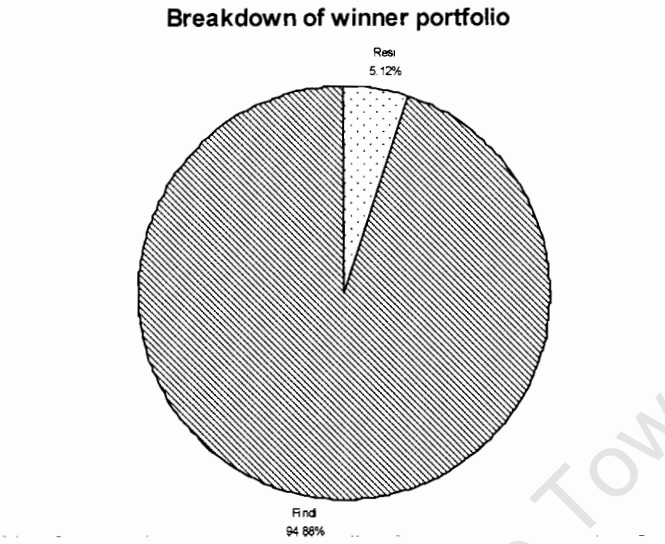
8.3.4 Decomposition of the winner portfolio

The results presented above indicate that there is no significant linear relationship between the winner portfolio and the Resources index. This is a surprising result and requires further explanation. Figure 8.2 below shows the breakdown of this portfolio into the Resources index and the Financial-industrial index:

[11] $n.R^2 \sim \chi^2_{df}$ (8.12)

Figure 8.2. Winner portfolio decomposition

The pie chart below shows the proportion of the winner portfolio which is drawn from the Resources index and the proportion which is drawn from the Financial-industrial index over the period from January 1995 until December 2004.



It is clear from the above figure that a great majority of the winner portfolio is drawn from the Financial-industrial index. This explains why a highly significant linear relationship emerged between the portfolio and this index and not the Resources index. Furthermore, this explains why the CAPM yields inferior results: the returns are regressed against the All-share index which is composed primarily of resources shares. It is therefore unlikely that the systematic risk of the winner portfolio is related to this market index.

8.3.5 Style analysis

The phenomenal abnormal returns earned by the portfolio also raise questions regarding the risk-adjustment procedure implemented. Van Rensburg (2001) finds that a number of anomalies persist after risk-adjustment using the two-factor APT. His results suggest that three style-based risk factors are present on the JSE Securities Exchange: size, momentum and earnings yield. This section therefore continues by examining the winner portfolio's exposure to these three style factors in order to guage the extent of the unmeasured risk.

8.3.5.1 Size

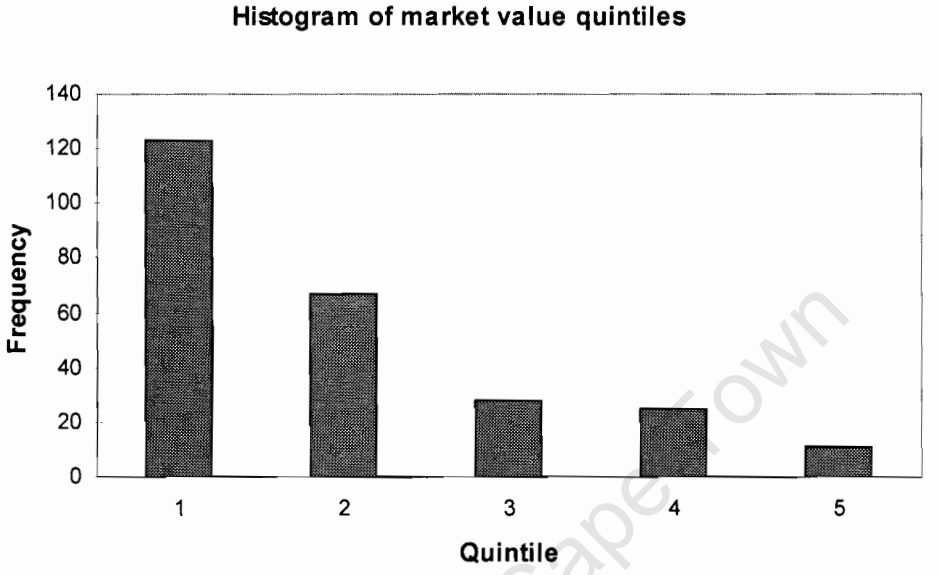
As detailed in Chapter 2 a great deal of literature has identified the presence of a size anomaly both internationally and on the JSE Securities Exchange (see for example Banz [1981], Reinganum [1981] or van Rensburg and Robertson [2002]). In terms of this research, smaller firms in terms of market capitalization tend to outperform their larger counterparts in risk-adjusted terms.

Van Rensburg (2001) find market capitalisation to proxy for the quality of a company, where quality encompasses factors such as size and bankruptcy improbability. This is an important source of style based risk which is not explicitly captured by the two-factor APT model. The portfolio's exposure to this source of risk therefore needs to be taken into account. According to van Rensburg this is particularly important in industrial shares. Since the winner portfolio is composed of mainly Financial-industrial shares, this adjustment is particularly vital.

In order to assess the extent of the winner portfolio's exposure to this source of risk, the entire independent sample is first categorized into quintiles based on market capitalization for every month of the sample. The histogram in Figure 8.3 below illustrates the frequency with which observations in the winner portfolio are drawn from each of these quintiles. If there is no size bias in the results, the histogram should be relatively flat, showing that firms are drawn at random from each of the quintiles. Instead, the histogram seems to show a systematic trend: most observations are drawn from the quintile 1 (which represents the smallest firms) and this frequency decreases consistently as size increases. This graphical test therefore suggests strongly that winner portfolio is biased towards smaller firms.

Figure 8.3. Histogram of market value quintiles for winner portfolio

The histogram below shows the decomposition of the winner portfolio into quintiles where these quintiles are calculated based on the relative market capitalisation of an individual company relative to all other companies in a particular month. This is derived over all 120 months of the sample period from January 1995 until December 2004. Quintile 1 represents the smallest shares while quintile 5 represents the largest shares.



This finding can be verified statistically with a Student two-sample t-test assuming unequal variances[12] to test whether the market capitalisation of the winner portfolio is less than the rest of the independent sample observations. This test requires that the underlying data be normally distributed. Therefore, the log of market value is used as this is shown to follow a normal distribution in Chapter 4.

The null and alternative hypotheses for this test are as follows:

[12] $$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)}} \qquad (8.13)$$

$$\text{with d.f.} = \frac{(s_1^2/n_1 + s_2^2/n_2)}{\left(\frac{(s_1^2/n_1)^2}{n_1 - 1} + \frac{(s_2^2/n_2)^2}{n_2 - 1}\right)} \qquad (8.14)$$

where $\bar{x}_i$ is the sample mean, μ_i is the population mean

s_i^2 is the sample variance, n_i is the number of observations

H_0: $\mu_{winner} - \mu_{other} = 0$

H_1: $\mu_{winner} - \mu_{other} < 0$

The resulting t-statistic and p-value are 12.92 and zero respectively. This implies that there is strong evidence to reject the null hypothesis with extremely high confidence and conclude that the average market capitalisation of observations in the winner portfolio is less than the average of those in the rest of the sample. This therefore implies that the size-risk is inherent in the portfolio.

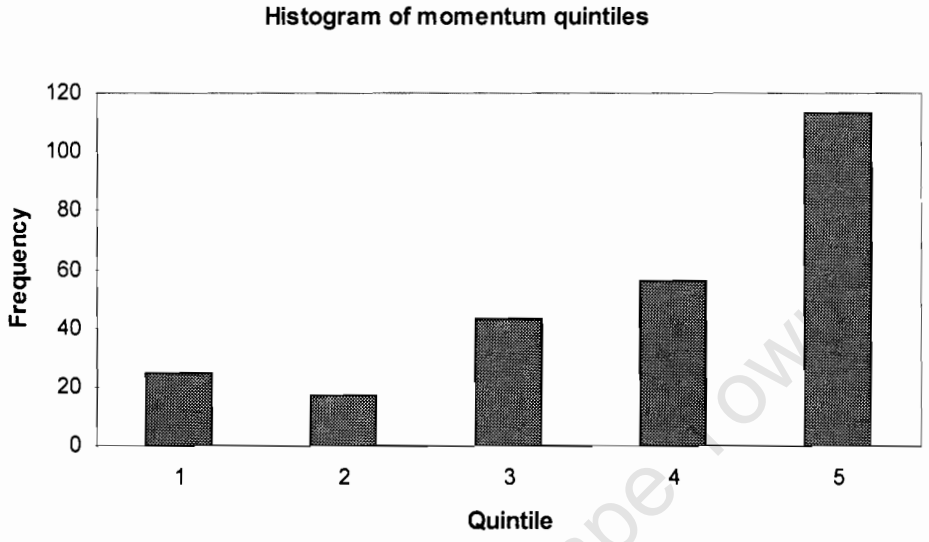
8.3.5.2 Momentum

Another source of style-based risk identified by van Rensburg (2001) and continually cited in other past literature is momentum (see for example Lo and MacKinley [1988]). Van Rensburg uses 12-month past positive returns as a proxy for his momentum cluster. Therefore the same variable is used in this study.

In a similar methodology as the previous section, the entire independent sample is decomposed into monthly quintiles based on the magnitude of 12-month momentum. Once again, if the winner portfolio is not biased towards high momentum, one would expect a similar number of observations to be drawn from each quintile. Figure 8.4 below shows the frequency with which each quintile appears in the winner portfolio. Once again a systematic pattern emerges: as momentum increases, more observations are drawn from the sample for inclusion in the winner portfolio.

Figure 8.4. Histogram of momentum quintiles for winner portfolio

The histogram below shows the decomposition of the winner portfolio into quintiles where these quintiles are calculated based on the relative 12 month momentum of an individual company relative to all other companies in a particular month. This is derived over all 120 months of the sample period from January 1995 until December 2004. Quintile 1 contains the smallest momentum shares while quintile 5 contains the largest momentum shares.



Again this result is verified more formally. Once again the parametric Student t-test is used as 12 month momentum is shown to be normally distributed in Chapter 4. The null and alternative hypotheses to be tested are:

H_0: $\mu_{winner} - \mu_{other} = 0$

H_1: $\mu_{winner} - \mu_{other} > 0$

The resulting t-statistic and p-value are 8.59 and zero respectively. This implies that there is overwhelming evidence to reject the null hypothesis and conclude that the average 12 month momentum of the winner portfolio is larger than the average of the rest of the sample.

8.3.5.3 Earnings yield

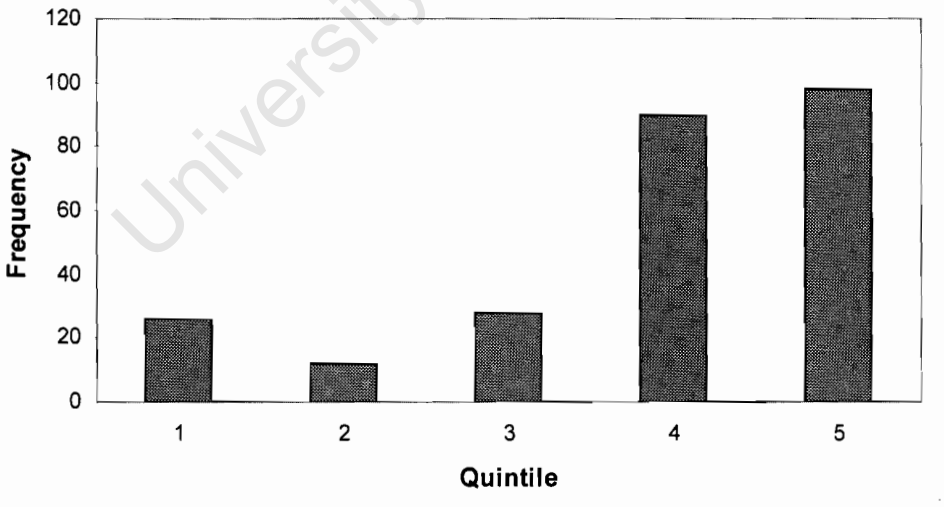
The final style factor considered is earnings yield. Van Rensburg (2001) finds that this variable proxies for value-related risk. A great deal of other literature also points to this variable and its reciprocal, the price-earnings ratio, as potential sources of

abnormal returns (see for example Basu [1977] and van Rensburg and Robertson [2002]).

As before the entire independent sample is decomposed into monthly quintiles based on the magnitude of the earnings yield. If the winner portfolio is not biased towards high earnings yields one would expect a similar number of observations to be drawn from each quintile. Figure 8.5 below shows the frequency with which each quintile appears in the winner portfolio. Once again a systematic pattern emerges: as earnings yield increases, more observations are drawn from the sample for inclusion in the winner portfolio. This pattern is expected, however, as the filters applied explicitly isolate high earnings yield companies.

Figure 8.5. Histogram of earnings yield quintiles for winner portfolio

The histogram below shows the decomposition of the winner portfolio into quintiles where these quintiles are calculated based on the relative earnings yield of an individual company relative to all other companies in a particular month. This is derived over all 120 months of the sample period from January 1995 until December 2004. Quintile 1 contains the smallest earnings yield shares while quintile 5 contains the largest earnings yield shares.



Again earnings yield is found to be normally distributed in Chapter 4. Therefore the Student t-test can be used to test whether the average earnings yield of the winner portfolio is in fact higher than that of the rest of the sample. The null and alternative hypotheses are therefore as follows:

H_0: $\mu_{winner} - \mu_{other} = 0$

H_1: $\mu_{winner} - \mu_{other} > 0$

The t-statistic of 7.81 and corresponding p-value of zero suggest that there is overwhelming evidence to reject the null hypothesis and conclude that the average earnings yield of companies in the winner portfolio is in fact greater than that of the rest of the independent sample.

8.4 Loser Portfolio

This section applies the loser filters derived in Chapter 7 to the independent sample while following the same methodology as Section 8.3. It begins by considering the absolute returns of this portfolio and the return pattern over time. It then continues by applying the risk-adjustment procedures of Section 8.2 in order to determine whether the high returns of this portfolio are simply explained by the risk inherent in the portfolio. Next a breakdown of the portfolio into the Resources and the Financial-industrial index is conducted in order to further explain the results. Finally, a number of style-based sources of risk in the loser portfolio are examined.

8.4.1 Absolute returns

A full list of companies selected in the independent sample is shown in Appendix F.6. Table 8.5 below contrasts the return characteristics of the loser portfolio selected by the stepwise median comparison procedure and the stepwise Sharpe maximization procedure. Although the latter achieves lower returns and a marginally lower Sharoe ratio, it does this at the expense of a higher standard deviation and a much lower sample size. The median comparison portfolio still offers extremely low average returns of below -20 percent, resulting partly from the fact that over 26 percent of the companies chosen are extreme losers Since the Sharpe technique selects on average about one share every three months, this result is not useful and only the median comparison procedure is considered for the remainder of this section.

Table 8.5. Loser portfolio summary statistics

The table below contrasts the performance of the stepwise median comparison and Sharpe maximisation techniques of Chapter 7 on the independent sample. The table shows the breakdown of sample size in terms of average number of companies per month, proportion of the total sample held and total number of losers (out of a possible 661). The performance of the portfolio is summarized by the mean, median, maximum and minimum annual return of the portfolio. In addition it shows the standard deviation of the portfolio returns and the resulting Sharpe ratio

	Median Comparison	Sharpe maximisation
Average number of companies	6.55	0.35
Proportion of sample	6.18%	0.33%
Number of losers	74.0	6
Mean return	-20.72%	-46.38%
Median return	-27.31%	-61.00%
Standard deviation	32.30%	52.37%
Maximum return	322.08%	3.12%
Mininimum return	-90.44%	-86.28%
Sharpe ratio	-1.00	-1.09

Table 8.6 shows the return patterns of the median comparison portfolio over time. Unlike the winner filter presented earlier, the loser filter does not seem to bias observations away from any particular period of the sample. It is clear, however, that the number of observations rises sharply for the period from 1998 until 2001. This corresponds to a period of a large rally in the South African market followed by a sharp decline. Since the loser filter chooses many shares over the period, it suggests that the filters have been derived based on the properties of companies which ensued during this time.

One immediate implication is that the scarcity of companies identified in certain periods, particularly the first and last years of the sample, means that diversification through this portfolio alone is unlikely. On the other hand, in bear markets the strategy becomes much more useful.

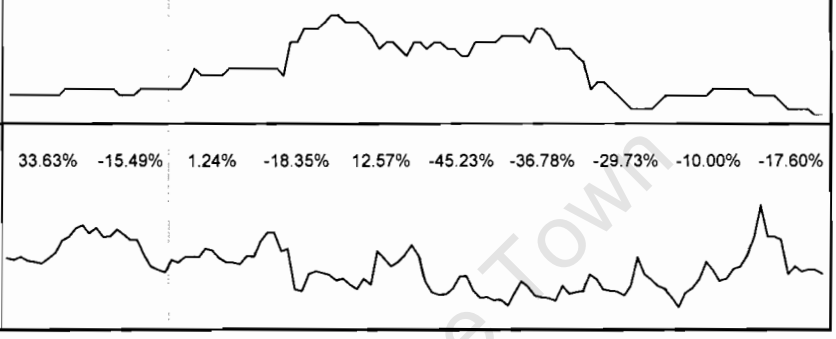
Another observation from Table 8.6 is that the portfolio earns positive returns, albeit low, in certain periods. Since these positive performance periods correspond with periods in which low numbers of shares are held, this may be a result of limited diversification. Returns may therefore reflect the greater influence of firm-specific factors. However, the strategy does still appear to be relatively useful, with only three

years offering positive returns and the remaining seven years boasting significant negative returns.

Table 8.6. Loser portfolio calendar time payoffs

The table shows the equally-weighted average return over a rolling 12-month period resulting from the loser portfolio in each year of the sample. The table also shows the average number of company included in the portfolio per month. In addition, monthly values for each of these measures are plotted over time.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Average number of companies	3.33	3.75	6.00	10.33	12.00	10.42	11.33	3.08	3.42	1.83
Average Return	33.63%	-15.49%	1.24%	-18.35%	12.57%	-45.23%	-36.78%	-29.73%	-10.00%	-17.60%

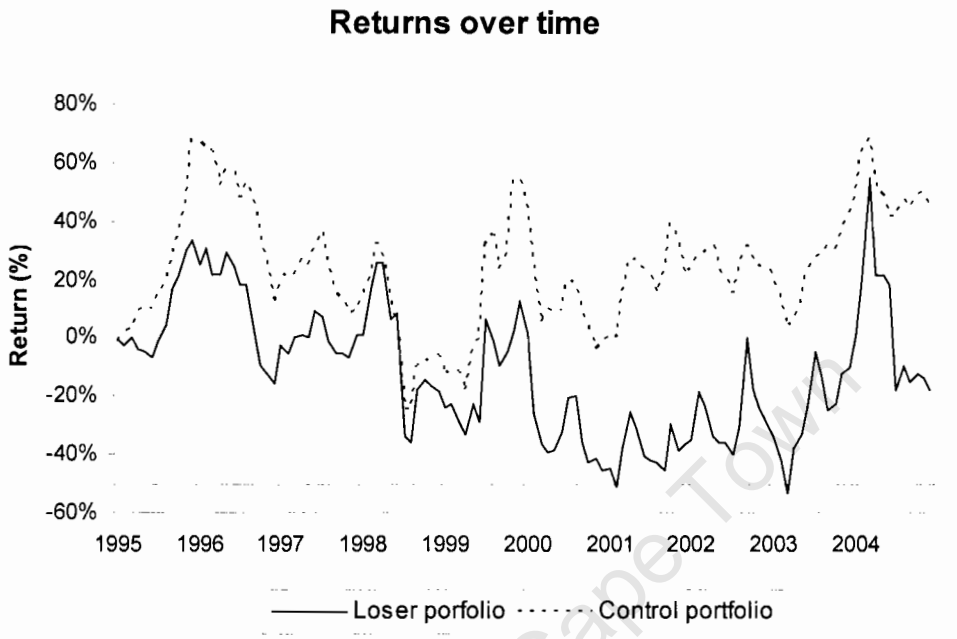


The equally weighted average returns over a rolling twelve month period are graphically compared to the corresponding returns on an equally-weighted portfolio of all shares in the independent sample in Figure 8.6 below. This graph shows that the direction of returns is similar between the two portfolios. However, the loser portfolio always underperforms its benchmark and has more pronounced movements.

In addition, Appendix F.7. contrasts the performance of the loser portfolio to that of the Resources and Financial-industrial indexes. Although the return patterns are similar between the three portfolios, movements of the loser portfolio and the Financial-industrial index are particularly close. This observation is discussed in more detail later. Once again, the loser portfolio does in fact underperform the market indexes over most of the sample period. It again appears that the movements in the loser portfolio returns are more pronounced, perhaps indicating large systematic risk in the portfolio.

Figure 8.6. Loser portfolio average returns over time

The figure graphs the equally weighted average return over a rolling 12 month period earned by the loser portfolio in each year of the sample from 1995 until 2004. On the same axes, the graph also shows an equally-weighted portfolio of all shares in the independent sample over the same period.



As with the winner portfolio, considering absolute returns alone is not sufficient. It is necessary to adjust these returns for the inherent risk of the portfolio. This task is approached in the next section.

8.4.2 Risk-adjusted returns: CAPM

As in Section 8.3, the returns are first adjusted for risk using the traditional CAPM. Unlike the winner portfolio, however, the loser portfolio contains observations over the entire sample period from January 1995 until December 2004. Therefore the regression is run over the entire ten year period. Furthermore, an investor wishing to trade on the basis of the loser portfolio would sell all component stocks short in order to profit from the price decrease. Therefore this section considers the risk-adjusted results from such a strategy assuming no short sale restrictions or transaction costs. A summary of the output for the model is shown in Table 8.7 below:

Table 8.7. Two-factor CAPM output

The table shows some of the output for the regression of the monthly excess loser portfolio returns against the excess returns on the Alsi over the period from January 1994 until December 2004 when the component stocks of the loser portfolio are sold short. The table shows the values and t-tests of the various coefficients as well as measures of the strength of the model.

Variable	Coefficient	t-Statistic	Prob.
α	0.0038	4.6469	0.0000
$r_{ALSI} - r_f$	-0.3754	-4.6871	0.0000
R-squared	0.1570		
Adjusted R-squared	0.1498		
F-statistic	21.9685		
Prob(F-statistic)	0.0000		

The coefficient of determination shows that 15.7 percent of the variability of portfolio returns is explained by variability of market returns. Furthermore, the F-statistic of 21.96 and corresponding p-value of zero show that the overall model is highly significant. The significant alpha of 0.38 percent implies that an abnormal risk-adjusted return of 4.66 percent can be obtained with the portfolio. Furthermore, the portfolio varies inversely with the market, indicated by the negative beta of -0.37.

8.4.3 Risk-adjusted returns: APT

As mentioned in Section 8.2, the two-factor APT with the Resi and the Findi as the factors is the superior risk-adjustment model. This section begins by running this model and interpreting the results. Any violations of the underlying assumptions are then considered.

8.4.3.1 Regression and interpretation

Unlike the winner portfolio, the loser portfolio contains observations over the entire sample period from January 1995 until December 2004. Therefore the regression is run over the entire ten year period. Furthermore, an investor wishing to trade on the basis of the loser portfolio would sell all component stocks short in order to profit from the price decrease. Therefore this section considers the risk-adjusted results from such a strategy assuming no short sale restrictions or transaction costs. A summary of the output for the model is shown in Table 8.8 below:

Table 8.8. Two-factor APT regression output

The table shows some of the output for the regression of the monthly excess loser portfolio returns against the excess returns on the Findi and the Resi over the period from January 1994 until December 2004 when the component stocks of the loser portfolio are sold short. The table shows the values and t-tests of the various coefficients as well as measures of the strength of the model.

Variable	Coefficient	t-Statistic	Prob.
α	-0.0048	-0.7388	0.4615
$r_{RESI} - r_f$	-0.0197	-0.2231	0.8239
$r_{FINDI} - r_f$	-0.9331	-7.7593	0
R-squared	0.4312		
Adjusted R-squared	0.4215		
F-statistic	44.3567		
Prob(F-statistic)	0.0000		

The coefficient of determination, or R-squared, shows that more than 43 percent of the variability in portfolio excess returns which is explained by variability in Findi and Resi excess returns. When adjusted for degrees of freedom, the coefficient of determination shows that more than 42 percent of the variation in portfolio returns is explained by variation in the independent variables. This indicates that the model is a reasonable fit.

The large F-statistic of 44.36 and corresponding p-value of almost zero causes the null hypothesis that all of the parameters are equal to zero to be rejected with an extremely high level of confidence. Therefore there is a great deal of evidence to infer that the model is valid. Once again, this model is significantly better than the CAPM, implying that more emphasis should be placed on these results.

The intercept term (alpha) of the model is not significantly different from zero with a t-statistic of –0.7388 and a p-value of 46.15 and can therefore cannot be interpreted. Instead this suggests that the portfolio does not outperform the market in risk adjusted terms.

The beta on the Financial-industrial index is highly significant and implies that loser portfolio decreases by 93 cents for every Rand increase in the index. The negative beta is to be expected as the portfolio involves selling short. Therefore if the value of

the underlying stock decreases when the market decreases, this will result in an increase in value for the portfolio. Since the beta on the Resources index is not significant even at an extremely low significance level, it cannot be interpreted. This insignificance is investigated later in this chapter.

8.4.3.2 Validation of assumptions

As mentioned in Section 8.1, a number of assumptions are involved in CLRM. It is therefore necessary to validate these assumptions. In particular, the assumptions of normality, no autocorrelation and homoscedasticty of the residuals are considered. Furthermore, the assumption of no multicollinearity between independent variables is tested.

(i) Normality

Appendix F.8. contains a histogram of the residuals from the regression. Although the distribution of the residuals in this graph appears approximately normal, the Jarque-Bera test presents conflicting results. The high JB-statistic of 8.14 and corresponding p-value of 0.017 imply that the assumption of normality can be rejected at the 95 percent confidence level.

According to Gujarati (1995), if the objective of a regression is to provide a point estimate of parameters, no assumption regarding the distribution of the residuals is necessary. On the other hand, if the objective is inference, it is necessary to have an idea of the distribution. Since the assumption of normality has not been met, no inference can be reliably made from this model.

(ii) Autocorrelation

Once again two methods are used to test for autocorrelation, the results of which are presented in Appendix F.9. The residuals plotted over time illuminate no apparent pattern in the residuals. More formally, the Ljung-Box (LB) statistics are so large in all 28 lags that a p-value of zero results in each case. Therefore the null hypothesis of the existence of autocorrelation can always be rejected.

(iii) Heteroscedasticity

The next assumption is that the variance of the error terms is constant, or homoscedastic. Appendix F.10. presents the results for a simple graphical method. The residuals are plotted against the predicted values of the dependent variable in order to determine if there is some pattern in variance as the magnitude of the predicted value increases. From inspection of this scatterplot the residuals to appear to vary with the predicted values.

The more formal White's general heteroscedasticity test is conducted and results in a test statistic of 119.85 and corresponding p-value of 0. This verifies that heteroscedasticity is in fact present and it is therefore necessary to correct for this.

White (1980) presents a method for estimating heteroscedasticity-consistent variances and standard errors such that inferences can be drawn about the values of the true parameters.[13] The output for this procedure, shown in Table 8.9 below, yields similar results. The estimated values for all parameters are identical. The only difference is that the coefficient on the excess returns on the Resources index and the intercept term decrease in significance. Since these estimates were insignificant in the original regression this has no impact on the interpretation of the above results.

[13] The variance of the parameter β_2, $\text{var}(\hat{\beta}_2) = \dfrac{\sum x_i^2 \sigma_i^2}{\sum (x_i^2)^2}$ (8.14)

Where x_i^2 is the i^{th} value of the independent variable

σ_i^2 is the expected value of the residual, $E(u_i^2)$

White (1980) shows that by using the square of each actual residual, $\hat{u}_i^2$ in place of σ_i^2 the resulting variance estimate is a consistent estimator of $\text{var}(\hat{\beta}_2)$ and overcomes the shortcomings of heteroscedasticity.

Table 8.9. Two-factor APT regression output with White's (1980) adjustment

The table shows some of the output for the regression of the monthly excess loser portfolio returns against the excess returns on the Findi and the Resi over the period from January 1994 until December 2004 when the component stocks of the loser portfolio are sold short. White's heteroscedasticity-consistent variances approach is applied to negate the effect of heteroscedsatistcy on the interpretability of the estimated parameters. The table shows the values and t-tests of the various coefficients as well as measures of the strength of the model.

Variable	Coefficient	t-Statistic	Prob.
α	-0.0048	-0.7385	0.4617
$r_{RESI} - r_f$	-0.0197	-0.2057	0.8374
$r_{FINDI} - r_f$	-0.9331	-7.9633	0

(iv) Multicollinearity

In order to test whether multicollinearity is a problem the same rule of thumb from Gujarati (1995) is applied as in the winner regressions. Since the pairwise correlations of 0.54 is far below than 0.8, multicollinearity is not a problem. This pairwise correlation is different to that derived for the winner regression as the correlation is derived over the entire 120 sample period in this case, whereas it is only derived over the last 60 months of the sample earlier.

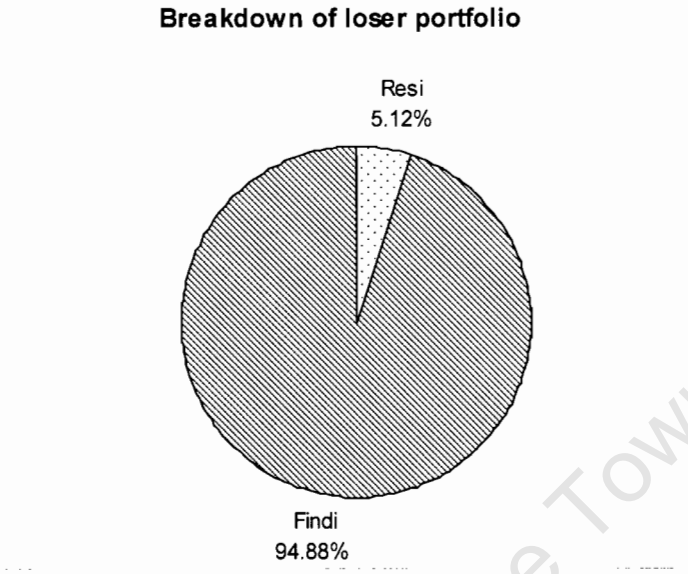
Since it appears that none of the CLRM assumptions have been violated it is safe to conclude that the regression above is valid and the interpretations justified.

8.4.4 Decomposition of the loser portfolio

The results presented above indicate once again that there is no significant linear relationship between the winner portfolio and the Resources index. Once more this can be explained by considering the composition of the portfolio. Figure 8.7 below shows the breakdown of this portfolio into the Resources index and the Financial-industrial index:

Figure 8.7. Loser portfolio decomposition

The pie chart below shows the proportion of the loser portfolio which is drawn from the Resources index and the proportion which is drawn from the Financial-industrial index over the period from January 1995 until December 2004.



The fact that great majority of the loser portfolio is drawn from the Financial-industrial index might explain why a highly significant linear relationship emerged between the portfolio and this index and not the Resources index. This may also explain why the CAPM is weaker than the APT in terms of measures such as the coefficient of determination: it is overweighted in resources, shadowing the effect of the Financial-industrial index on the loser portfolio.

8.4.5 Style analysis

Despite the fact that the large positive returns from the short loser portfolio do not persist after risk-adjustment with the APT, it is still useful to consider style-based risk factors to determine whether these may further explain the returns on the portfolio. Once again size, momentum and earnings yield are examined to determine whether they explain any of the previously unexplained risk in the simple two-factor APT as per van Rensburg (2001).

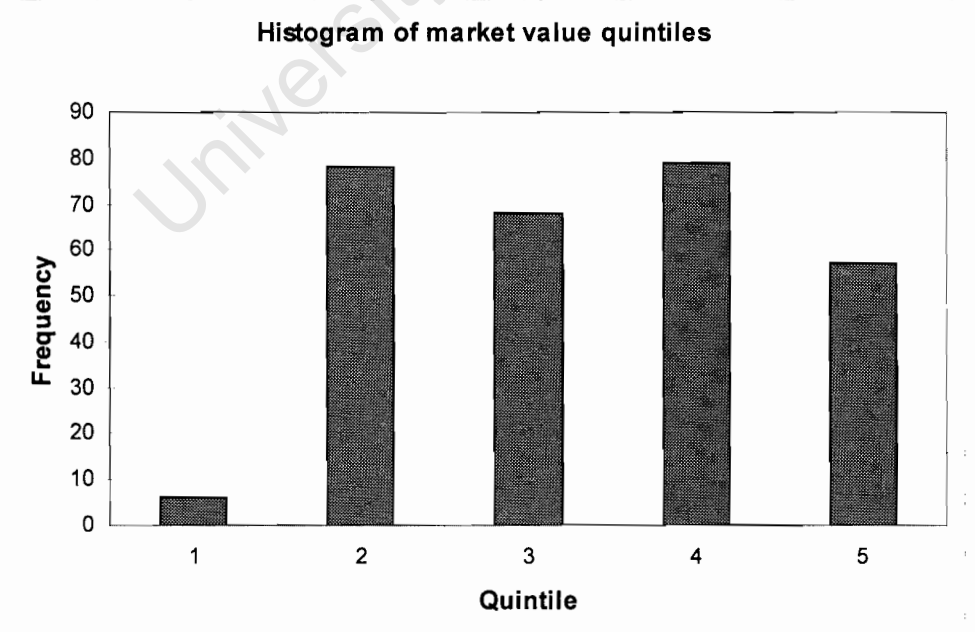
8.4.5.1 Size

In order to assess the extent of the winner portfolio's exposure to the size-based source of risk, the entire independent sample is first categorized into quintiles based on market capitalization for every month of the sample. The histogram in Figure 8.8 below illustrates the frequency with which observations in the loser portfolio are drawn from each of these quintiles. If there is no size bias in the results, the histogram should be relatively flat, showing that firms are drawn at random from each of the quintiles.

This is indeed the case with the loser portfolio. With the exception of the quintile of smallest firms, the loser portfolio is taken almost equally from the other portfolios. This suggests that the filters exclude only the smallest firms but do not discriminate against other companies.

Figure 8.8. Histogram of market value quintiles for loser portfolio

The histogram below shows the decomposition of the loser portfolio into quintiles where these quintiles are calculated based on the relative market capitalisation of an individual company relative to all other companies in a particular month. This is derived over all 120 months of the sample period from January 1995 until December 2004. Quintile 1 represents the smallest shares while quintile 5 represents the largest shares.



This finding can be verified statistically with a Student two-sample t-test assuming unequal variances to test whether the market capitalisation of the winner portfolio is

less than the rest of the independent sample observations. Since this test requires that the underlying data be normally distributed, the log of market value is again used as a proxy for size. As the portfolio lacks observations from the smallest quintile it is expected that the average size of the portfolio will be larger than that of the rest of the market.

The null and alternative hypotheses for this test are as follows:

H_0: $\mu_{winner} - \mu_{other} = 0$

H_1: $\mu_{winner} - \mu_{other} > 0$

The resulting t-statistic and p-value are 4.35 and zero respectively. This implies that there is strong evidence to reject the null hypothesis with extremely high confidence and conclude that the average market capitalisation of observations in the loser portfolio is greater than the average of those in the rest of the sample. The portfolio invests in larger shares which have less size-related risk.

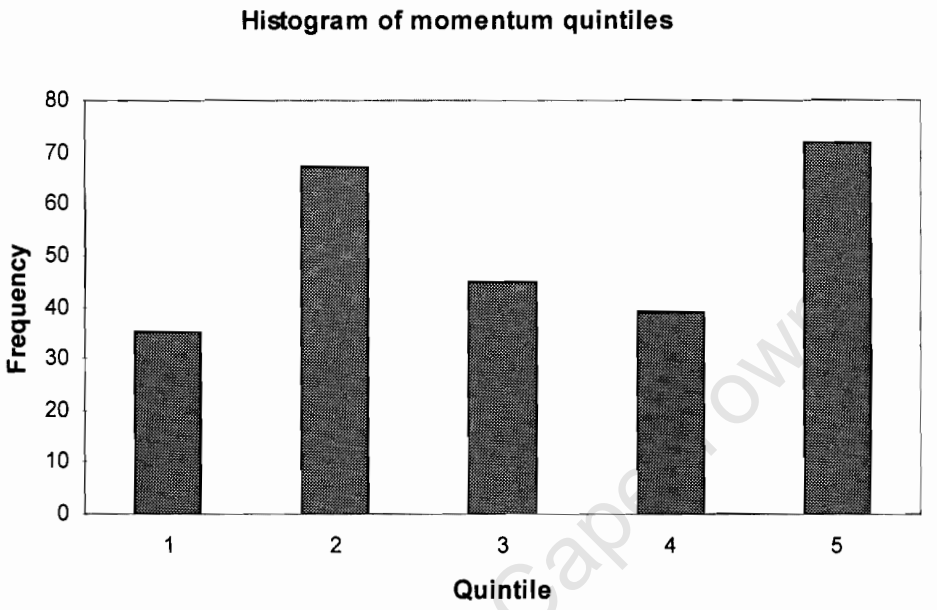
8.4.5.2 Momentum

The next source of style-based risk, identified by van Rensburg (2001) and considered in this analysis, is momentum. Again since van Rensburg uses 12-month past positive returns as a proxy for his momentum cluster, the same variable is used in this study.

Figure 8.9 below shows the frequency with which each momentum quintile derived over the entire independent sample appears in the loser portfolio. Once again no systematic pattern emerges: the loser portfolio appears to have been drawn at random from the various quintiles.

Figure 8.9. Histogram of momentum quintiles for loser portfolio

The histogram below shows the decomposition of the loser portfolio into quintiles where these quintiles are calculated based on the relative 12 month momentum of an individual company relative to all other companies in a particular month. This is derived over all 120 months of the sample period from January 1995 until December 2004. Quintile 1 contains the smallest momentum shares while quintile 5 contains the largest momentum shares.



This result is verified more formally with the Student t-test. The null and alternative hypotheses to be tested are:

H_0: $\mu_{winner} - \mu_{other} = 0$

H_1: $\mu_{winner} - \mu_{other} \neq 0$

The resulting t-statistic and p-value are 1.27 and 0.2 respectively imply that there is not enough evidence to reject the null hypothesis. It can therefore be concluded that no significant difference exists between the momentums in the loser portfolio and other shares.

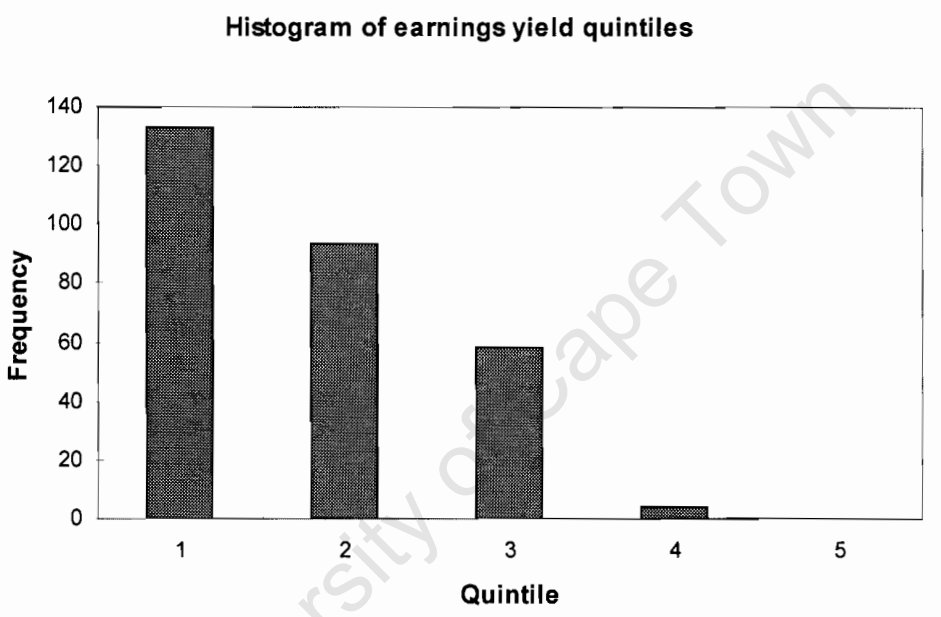
8.4.5.3 Earnings yield

The final style factor considered is earnings yield as a proxy for value-related risk. Figure 8.10 below shows the frequency with which each quintile from the entire independent sample appears in the loser portfolio. For the first time in the loser sample a systematic pattern emerges: as earnings yield decrease, more observations

are drawn from the sample for inclusion in the loser portfolio. This pattern is expected, however, as the filters applied explicitly isolate low earnings yield companies.

Figure 8.10. Histogram of earnings yield quintiles for loser portfolio

The histogram below shows the decomposition of the loser portfolio into quintiles where these quintiles are calculated based on the relative earnings yield of an individual company relative to all other companies in a particular month. This is derived over all 120 months of the sample period from January 1995 until December 2004. Quintile 1 contains the smallest earnings yield shares while quintile 5 contains the largest earnings yield shares.



The Student t-test is used to test whether the average earnings yield of the loser portfolio is in fact higher than that of the rest of the sample. The null and alternative hypotheses are therefore as follows:

H_0: $\mu_{winner} - \mu_{other} = 0$

H_1: $\mu_{winner} - \mu_{other} < 0$

The t-statistic of 11.14 and corresponding p-value of zero suggest that there is overwhelming evidence to reject the null hypothesis and conclude that the average

earnings yield of companies in the loser portfolio is in fact lower than that of the rest of the independent sample.

8.5 Summary and Conclusion

This chapter evaluates the winner and loser filter combinations, the product of this thesis thus far, on an independent sample. It begins by contrasting the performance characteristics of two alternatives for the winner combination: (1) the combination derived from the stepwise median comparison test and (2) the combination obtained from the stepwise Sharpe maximisation procedure.

The first option is clearly better, resulting in a significantly higher return, a lower standard deviation and a substantially larger sample size. Together these factors lead to a much higher Sharpe ratio. As the inferior alternative, the Sharpe maximisation filter is therefore dropped and only the median comparison filter considered for further analysis.

The resultant portfolio of this filter combination is adjusted for risk and is found to earn significant annualized abnormal returns of almost 40 percent. The validity of these results is verified through the consideration of the CLRM assumptions. It is found that the residuals are normally distributed, and no autocorrelation, heteroscedasticity or multicollinearity is present. This portfolio is then decomposed according to various characteristics. It is found that the majority of the shares selected are drawn from the Financial-industrial index. Furthermore, these tend to be smaller shares with higher momentums and higher earnings yields.

A similar procedure is then performed on the potential loser combinations. By comparing the results of the median comparison and Sharpe maximisation portfolios, it is clear that although the latter attains a lower return and Sharpe ratio, this comes at the expense of a much higher standard deviation. More importantly, this second alternative has a significantly smaller sample size, selecting about one share every three months as opposed to almost seven per month. Due to this considerably small

sample, the median comparison portfolio is again concluded to be the superior alternative and is earmarked for further analysis.

The short-sold loser portfolio is adjusted for risk and is found not to earn significant abnormal returns. Although no autocorrelation or multicollinearity is present, the residuals are not normally distributed and are heteroscedastic. White's (1980) heteroscedasticity-consistent variance approach is applied to overcome the latter problem and the results are found to be almost identical. Despite the insignificance of the alpha, this filter combination may still be useful in achieving substantial diversification as it negatively related to the market. Again this portfolio is drawn predominantly from the Financial-industrial index. The portfolio is composed mainly of larger companies with lower earnings yields. No momentum bias appears to be present.

-9-

Summary, Conclusion and Suggested Extensions

9.1 Introduction

The problem statement of this paper is to determine whether it is possible to predict extreme performers on the JSE Securities Exchange. The six sub-problems or objectives are necessary to achieve this are detailed in Chapter 1. They are to identify the factors which differentiate (1) extreme winners from other shares and (2) extreme losers from other shares; to build a combination of filter rules to select (3) extreme winners and (4) extreme losers; and consider whether the derived filter combinations still outperform the market in risk-adjusted terms for (5) extreme winners and (6) extreme losers.

The remainder of this chapter is set out as follows: Section 9.2 provides a summary the results and findings of this research with regards to each of the six objectives above. Section 9.3 concludes and suggests areas for future research.

9.2 Summary of results

This research is conducted on the JSE Securities Exchange over the ten year period from January 1995 until December 2004. The dataset includes monthly data of all companies listed on this exchange, excluding companies listed on the Venture Capital Market and Development Capital Market, and Property Loan Stock companies. All preference shares and companies lacking return data are also removed. Finally, only companies with market capitalisations of at least R100 million as at December 2004 are included. This results in a sample of 213 companies or 25 560 firm months. Since all data is acquired from Datastream International, the dataset is prone to survivorship bias but is free from lookahead bias.

The sample includes 2023 instances where a company's stock price at least doubles in a twelve month period (extreme winners). This includes 169 different companies, and 24276 company months of extreme performance. If overlaps are ignored, 7807 unique company months of extreme gain result. On the other hand, there are 1416 different instances of a company's stock price at least halving in a twelve month period (extreme losers), consisting of 141 different companies and 16922 company months. Ignoring overlaps this is reduced to 5397 unique company months.

The dataset is split into two samples: a test sample on which the procedures of Chapters 5 to 7 are conducted, and an independent sample on which out-of-sample verification of results is performed in Chapter 8. The samples are formed by first alphabetizing the companies in each economic group (in terms of the FTSE Global Classification System). The first half of companies in each group is allocated to the test sample while the second half is allocated to the independent sample.

After careful consideration of past literature, 92 variables are selected for consideration in five categories: information variables, valuation measures, technical indicators, fundamental measures (including profitability, performance, leverage, liquidity and efficiency) and industry position variables. Each of these variables is lagged one, three, six, nine and twelve months, creating an additional 460 evolution variables. Each of these is winsorised to remove outliers.

The factors which distinguish extreme winners from other shares is then investigated in terms of the first objective of this thesis. Each of the original 92 variables are separated into two samples: those which apply to extreme winners at the start of their 12-month performance period and all other observations. The chi-squared median test is used to deduce whether any difference exists between the medians of these two portfolios. Similarly, the median of each variable for extreme performers is compared to variables for the same companies one, three, six, nine and twelve months before the start of extreme performance.

By examining the variables which are different among the samples, a number of key themes begin to emerge regarding the nature of extreme winners. They tend to start becoming undervalued as much as twelve months before the start of extreme

performance, resulting in low market-to-book ratios and high earnings yields. There is a limited supply of winner shares evidenced by a low number of shares in issue. On top of this there is a great deal of disagreement in the market regarding the prospects of these companies, evidenced by poor earnings forecasts and high volume volatility.

Winners' fundamentals seem to improve considerably as the extreme performance approaches, perhaps in a response to a consolidation of assets and operations. In particular, sales and margins grow. Working capital management and general asset efficiency improves. All of this results in gradually increasing earnings growth. As the majority of the improvements have already been affected to the business, dividend payouts begin to increase, although they are still significantly less than non-extreme performers at the start of the extreme performance. In addition, despite the fact that there is a significant improvement in the fundamentals of extreme winners before the onset of their performance, at the start of the gain most of the fundamental signals are still poorer than non-extreme winners. This may lead to the disagreement in the market and the poor earnings forecasts by analysts, as mentioned earlier.

This fact is reiterated by considering the position of winners' fundamental variables compared to non-winners in the same economic groups. Although winners improve positionally in terms of some fundamental variables as extreme performance approaches, in general this improvement is not enough to overtake their counterparts positionally and they therefore remain below other companies as the start of the performance arrives.

A similar procedure is conducted with extreme losers, in fulfilment of the second objective. The findings indicate that management divests themselves of their holding in the company six months before the extreme loss begins, indicated by a decreasing percentage management ownership. Despite this, losers remain overvalued even at the start of the extreme loss. Losers tend to be younger companies for which a slow down in performance has already begun, resulting in a lower demand for the shares of the company. The company experiences declining sales and profitability as well as decreasing asset efficiency. Losers seem to reduce dividends and take on additional debt in order to increase the levels of assets held. Despite this, earnings decrease, leading to a deceleration in earnings growth. Their efforts do improve some

fundamental variables in terms of position within relevant economic groups. However, the improvement is not large enough as losers remain below most of the market in terms of these measures at the onset of their extreme loss.

After determining the general characteristics of extreme winners, the third objective aims to derive a combination of filters to isolate these shares. In aid of this, a stepwise median comparison procedure is developed. This process begins by creating ten values for consideration for each variable, based on the difference between the portfolios of extreme winners and other shares for the variable concerned. The procedure then loops through each of these values for each variable, filtering out observations greater than or less than that value. Using the Wilcoxon signed ranks test, the median return each of the resulting filtered portfolios is then compared to a prespecified comparison level. The filter which maximizes the z-statistic on the Wilcoxon test, and therefore creates the portfolio with returns most significantly larger than the comparison level, is included as the entering filter. The process repeats itself, this time filtering each value of every other variable, in combination with the entering filter. The filter which maximizes the z-statistic is included as the second filter. The process continues until no more filters are included.

However, one of the major problems with stepwise procedures is that they may result in solutions which are local but not global maxima – in other words they may not select the most optimal combination. This problem often stems from the fact that filters may not be effective by themselves and hence are not selected. They may be extremely effective in combination with some other filter though. One way to overcome this problem is to consider every permutation of combinations of variables. However, due to the large number of variables included and hence great amount of computational time required, this is not possible. Therefore, the procedure is run numerous times, each time altering one of the parameters: the comparison level. Each iteration produces a different combination of filters. The Sharpe ratio and a custom measure, the JK statistic, are used to contrast and evaluate these alternatives, eventually leading to the selection of a final winner filter combination.

This final winner filter combination first selects shares with 12-month lagged earnings yields of at least 0.15. This corresponds with the research of van Rensburg and

Rousseau (2004), which shows that the payoffs to value investing are the greatest when lagged measures of value are considered. Secondly, shares must have 9-month lagged 3-month momentums of at least -0.09. This excludes stocks which have experienced rapid recent declines in price. Thirdly, operating income to total assets must be less than 0.16, excluding highly profitable companies which may have already been spotted by the market. Fourthly, 12-month lagged return on assets must be greater than -0.12, excluding extremely unprofitable companies. Fifthly, 6-month lagged change in total assets must be less than 0.15, indicating that the company has not made a substantial recent investment in new assets. Finally, the difference between percentage change in accounts receivable and percentage change in sales must be less than 0.09. This excludes companies for which accounts receivable is growing substantially faster than sales, either due to the granting of excessive credit to stimulate sales, or a decline in sales.

This filter combination selects 11 percent of the test sample, resulting in average an annual portfolio return of 59 percent and an annual portfolio standard deviations of 24 percent.

In fulfilment of objective four, a similar procedure is conducted with extreme losers. The final loser filter combination firstly selects overvalued companies, with market-to-book ratios greater than 2.47. Secondly, the current share price as a percentage of the past 12-month high must be less than 99 percent, indicating that the share price has not been increasing, and may in fact have already started to decline. Thirdly, earnings yield must be less than 0.11, further helping to isolate overvalued companies. Fourthly, the ratio of sales to cash must be less than 7.20, eliminating those companies with either very high levels of sales, or very low levels of cash. Fifthly, companies which are listed for less than 14 years are selected, possibly because these less established companies are more prone to price shocks. Finally, dividend yield must be less than 4.52 percent, indicating that most profits are reinvested, rather than distributed.

This filter combination selects 10 percent of the test sample, resulting in an average annual portfolio return of -23 percent and an annual portfolio standard deviation of 26 percent.

Part of the fifth objective is to deduce whether the performance of the winner filter combination is robust. Therefore the filter combination is applied to the independent sample. This filter combination selects 8 percent of the independent sample, resulting in an average annual portfolio return of 50 percent and an annual portfolio standard deviation of 24 percent. In addition, it is necessary to determine whether these positive returns still remain after adjustment for risk. Both the CAPM and the two-factor APT with the Resources and Financial-industrial indexes as the factors is applied, resulting in a significant annual alpha of almost 40 percent. Therefore the portfolio still offers an exceptional return after risk-adjustment.

Interestingly, firms from mainly the Financial-industrial index are chosen., reducing the validity of the CAPM. Furthermore, the filter appears to be biased towards choosing smaller firms with higher momentum and higher earnings yields. This suggests that there may be sources of style-based risk present in the portfolio which are not captured by the two-factor APT. Despite this, it is unlikely that this additional risk is sufficient to erode the extremely large alpha.

A similar procedure is conducted with the loser filter combination in fulfilment of the sixth objective. This filter combination selects 6 percent of the independent sample, resulting in an average annual portfolio return of -11 percent and an annual portfolio standard deviation of 32 percent. Despite the large negative returns from this portfolio, the portfolio does not earn significant abnormal returns at even the 55 percent level. Despite the insignificance of the returns on the portfolio, significant diversification can be achieved through short selling the portfolio. Once again the portfolio is drawn primarily from the Financial-industrial index. However, unlike the winner combination, the loser portfolio does not appear to have any size or momentum bias. The shares selected do tend to have smaller earnings yields though.

9.3 Suggested extensions

Since a small amount of literature exists on the topic of extreme performance, a number of possible areas for future research and extensions for this thesis exist.

Although this is not an exhaustive list, this section discusses three areas: (1) transaction costs, (2) macroeconomic considerations and (3) alterations to the methodology for the derivation of filter combinations.

A number of real-world consideration could be incorporated into the research. For example, a possible expansion is to incorporate transaction, short selling restrictions and other trading costs in the analysis. Since Stoll and Whaley (1983) find that transaction costs are proportionately higher for smaller firms and Roll (1984) finds that bid-ask spread is strongly negatively related to firm size, this is particularly pertinent for the winner filter combination as the resulting portfolio is made up of mostly smaller shares. It is therefore possible that the inclusion of these costs may significantly erode the profits to this strategy.

Furthermore, some past research suggests that the success of certain factors in identifying extreme performers is contingent on the market condition. O'Neil (2004) mentions in his "CAN SLIM" strategy that extreme winners are less likely in a weak market. Inflationary conditions also seem to play a role in the predictive power of certain signals. For example, Lev and Thiagarajan (1993) find that the negative message conveyed by receivables increasing relative to sales is only statistically significant in high-inflation years. They also find that economic growth measured by the change in real GNP, and business activity measured by the change in Business Inventories, have an effect on fundamental signals. Abarbnell and Bushee (1997) find similar results with respect to receivables as a signal. In addition, they find that the gross margin is also a more significant signal in high-inflation years when it is more vital that firms are able to maintain their margins in the face of rising input prices. Future research can therefore consider the effect of macroeconomic conditions on the success of the extreme performer identification, and even derive different filter combinations for application in different scenarios.

Although a unique methodology for the selection of filter combinations is developed in this paper, numerous other methods are possible. A suggested area for future research is therefore to apply some of these alternative methodologies and contrast the results to the findings of this thesis. For example, no published research has yet applied a non-linear model such as in Dong et al (2003) in a South African context.

Neural networks could therefore be used to predict extreme performers on the JSE Securities Exchange.

Despite the fact that the parameters of the stepwise procedure used are altered to increase the likelihood of selecting the optimal filter combination, a large number of other permutations still exist. A machine learning procedure, such as Population-based Incremental Learning (PBIL), could be applied in order to more effectively consider alternatives.

Binary methods for identifying extreme performance which do not take the magnitude of performance into account could also be considered. For example logit regressions could be applied. Alternatively, the geometric separability index of Thornton (1997) to find those factors which effectively distinguish extreme performers from non-extreme performers could be used.

Another possibility is to use the Classification and Regression Trees (CART) of Breiman, Friedman, Olshen and Stone (1984) to derive filter combinations. CART analysis is a binary statistical tree-building technique used in decision making. By applying this technique in the context of extreme performance, a number of different routes to extreme performance may be illuminated.

Due to the extremely large risk-adjusted returns attained by the winner portfolio, it is unlikely that all of this performance can be attributed to unmeasured risk factors. This thesis therefore provides substantial evidence refuting the efficiency of the JSE Securities Exchange. The results may change substantially after taking real-world considerations such as transaction costs, short sale restrictions and macroeconomic conditions into account, however. Furthermore, future research may find more significant results through applying another statistical technique for identifying extreme performers. Either way, the author hopes this thesis has at least two implications: (1) to create a unique methodology which future researchers find useful for deriving filter rules, and (2) to provide a base from which future research into extreme performers, particularly in a South African context, can launch itself.

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List of Appendices

Appendix A

This appendix refers to Chapter 3: Data Analysis and Design

Appendix A.1. Securities with no Return Data

The table shows those securities on the JSE Securities Exchange for which no return data is available over the 10 year period from January 1995 until December 2004. Due to the lack of return data these securities have been dropped from the study.

Code	Name
ACD	ALLIANCE DATA
MSZ	ANGLO AMERICAN PLAT.PF
AQP	AQUARIUS PLAT. (JSE)
ACH	ARCH EQUITY
ASG	ASSMANG
ASR	ASSORE
CSL	CONSOL
LEW	LEWIS GROUP
PTG	PEERMONT GLOBAL
SPP	SPAR GROUP

Appendix A.2. FTSE / JSE Property Loan Stock Index (J256)

The table shows the companies listed under the Property Loan Stock (PLS) Index (J256) on the JSE Securities Exchange. These companies have different tax structures to other companies and as such discrepancies between financial ratios of these and other companies may exist. Therefore, these securities have been removed from this study.

Code	Name
GRT	GROWTHPOINT PROPS.
HYP	HYPROP INVESTMENTS
APB	APHEXI PROPERTIES 'B'
APA	APHEXI PROPERTIES 'A'
SRL	SOUTH AF.RET.PROPS.
RDF	REDEFINE INCOME FD.
PAP	PANGBOURNE PROPS.
VKE	VUKILE PR.FUND
RES	RESILIENT PR.FD.
IFR	IFOUR PROPERTIES
ACP	ACUCAP PROPERTIES
MPL	METBOARD PROPS.
ATS	ATLAS PROPERTIES
FSP	FREESTONE PR.HDG.
PRA	PARAMOUNT PR.FD.
SPE	SPEARHEAD PROPS.
PMM	PREMIUM PROPERTIES
OCT	OCTODEC INVESTMENT
ABT	AMBIT PROPERTIES
FVT	FAIRVEST PR.HDG.
ALA	ALPINA PROPERTY HDG.'A'

Appendix A.3. Variables Undergoing Logarithmic Transformation

The table shows those variables which undergo a natural logarithmic transformation. This is to remove the effect of significant positive skewness in terms of Foster (1978).

Code	Variable
MV	Size
VOL_3	Daily trading volume compared to 3-month average
VOL_6	Daily trading volume compared to 6-month average
VOL_12	Daily trading volume compared to 12-month average
VOL_18	Daily trading volume compared to 18-month average
VOL_24	Daily trading volume compared to 24-month average
SDEV_VOL	Historical daily volatility over past 3 months compared to 12 months before
VOLtNOSHARES	Average turnover over past 6 months (no of shares traded / total shares outstanding)
EPS	Annual EPS
SALEStCASH	Sales to total cash

Appendix A.4. Sample Extreme Winners Sorted by Company

The table lists 12 month periods of extreme performance for all extreme winners on the JSE Securities Exchange from January 1995 until December 2004 included in this study. An extreme winner is defined as a stock which at least doubles in a 12 month period. In addition to the names of all extreme performers, the table lists the share codes for each, the start date of the 12 month period of extreme performance, as well as the return over each of these periods. The lists are sorted by company.

Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return
ADR	ADCORP	1995/01/31	103.97%	ABL	AFRICAN BANK INVS.	1996/07/31	537.88%	ANG	ANGLOGOLD ASHANTI	2001/01/31	123.87%
ADR	ADCORP	1995/02/28	137.98%	ABL	AFRICAN BANK INVS.	1996/08/31	603.48%	ANG	ANGLOGOLD ASHANTI	2001/02/28	123.45%
ADR	ADCORP	1995/03/31	206.23%	ABL	AFRICAN BANK INVS	1996/09/30	459.37%	ANG	ANGLOGOLD ASHANTI	2001/03/31	164.21%
ADR	ADCORP	1995/04/30	224.03%	ABL	AFRICAN BANK INVS.	1996/10/31	360.51%	ANG	ANGLOGOLD ASHANTI	2001/04/30	111.71%
ADR	ADCORP	1995/05/31	216.85%	ABL	AFRICAN BANK INVS.	1996/11/30	321.54%	ANG	ANGLOGOLD ASHANTI	2001/05/31	121.83%
ADR	ADCORP	1995/06/30	254.37%	ABL	AFRICAN BANK INVS.	1996/12/31	386.41%	ANG	ANGLOGOLD ASHANTI	2001/06/30	104.72%
ADR	ADCORP	1995/07/31	237.49%	ABL	AFRICAN BANK INVS.	1997/01/31	633.09%	ART	ARGENT INDUSTRIAL	1998/06/30	114.66%
ADR	ADCORP	1995/08/31	174.52%	ABL	AFRICAN BANK INVS.	1997/02/28	645.84%	ART	ARGENT INDUSTRIAL	1998/12/31	108.46%
ADR	ADCORP	1995/09/30	164.51%	ABL	AFRICAN BANK INVS.	1997/03/31	503.59%	ART	ARGENT INDUSTRIAL	1999/01/31	137.23%
ADR	ADCORP	1995/10/31	168.72%	ABL	AFRICAN BANK INVS.	1997/04/30	734.53%	ART	ARGENT INDUSTRIAL	1999/02/26	145.36%
ADR	ADCORP	1995/11/30	170.01%	ABL	AFRICAN BANK INVS.	1997/05/31	658.26%	ART	ARGENT INDUSTRIAL	1999/03/31	100.00%
ADR	ADCORP	1995/12/31	251.02%	ABL	AFRICAN BANK INVS.	1997/06/30	474.89%	ART	ARGENT INDUSTRIAL	1999/05/31	114.88%
ADR	ADCORP	1996/01/31	301.65%	ABL	AFRICAN BANK INVS.	1997/07/31	334.61%	ART	ARGENT INDUSTRIAL	2000/08/31	102.59%
ADR	ADCORP	1996/02/29	247.14%	ABL	AFRICAN BANK INVS.	1997/08/31	104.27%	ART	ARGENT INDUSTRIAL	2001/12/31	128.08%
ADR	ADCORP	1996/03/31	184.70%	ABL	AFRICAN BANK INVS.	1997/09/30	152.92%	ART	ARGENT INDUSTRIAL	2002/01/31	119.81%
ADR	ADCORP	1996/04/30	149.33%	ABL	AFRICAN BANK INVS.	1997/10/31	276.07%	ART	ARGENT INDUSTRIAL	2002/02/28	104.90%
ADR	ADCORP	1996/05/31	179.95%	ABL	AFRICAN BANK INVS.	1997/11/30	182.54%	ART	ARGENT INDUSTRIAL	2003/10/31	120.17%
ADR	ADCORP	1996/06/30	129.87%	ABL	AFRICAN BANK INVS.	1997/12/31	163.16%	ART	ARGENT INDUSTRIAL	2003/11/30	208.53%
ADR	ADCORP	1996/07/31	181.59%	ABL	AFRICAN BANK INVS.	2002/12/31	100.44%	ART	ARGENT INDUSTRIAL	2003/12/31	200.30%
ADR	ADCORP	1996/08/31	241.28%	ABL	AFRICAN BANK INVS.	2003/02/28	102.74%	APN	ASPEN PHMCR.	1997/06/30	389.78%
ADR	ADCORP	1996/09/30	214.28%	ABL	AFRICAN BANK INVS.	2003/03/31	147.80%	APN	ASPEN PHMCR.	1997/07/31	608.51%
ADR	ADCORP	1996/10/31	191.50%	ABL	AFRICAN BANK INVS.	2003/04/30	131.20%	APN	ASPEN PHMCR.	1997/08/31	447.65%
ADR	ADCORP	1996/11/30	154.57%	ABL	AFRICAN BANK INVS.	2003/05/31	126.27%	APN	ASPEN PHMCR.	1997/09/30	399.94%
ADR	ADCORP	1997/02/28	107.43%	ABL	AFRICAN BANK INVS.	2003/06/30	126.13%	APN	ASPEN PHMCR.	1997/10/31	462.43%
ADR	ADCORP	1997/04/30	155.28%	ABL	AFRICAN BANK INVS.	2003/09/30	112.89%	APN	ASPEN PHMCR.	1997/11/30	643.89%
ADR	ADCORP	1997/05/31	115.72%	ABL	AFRICAN BANK INVS.	2003/10/31	105.80%	APN	ASPEN PHMCR.	1997/12/31	728.70%
ADR	ADCORP	2003/02/28	111.06%	ABL	AFRICAN BANK INVS.	2003/11/30	115.12%	APN	ASPEN PHMCR.	1998/01/31	1036.33%
ADR	ADCORP	2003/03/31	118.60%	ABL	AFRICAN BANK INVS.	2003/12/31	112.73%	APN	ASPEN PHMCR.	1998/02/28	1224.86%
ADR	ADCORP	2003/04/30	103.79%	AFI	AFRICAN LIFE ASR.	1995/03/31	111.10%	APN	ASPEN PHMCR.	1998/03/31	2199.78%
ADH	ADVTECH	2002/12/31	109.47%	AFI	AFRICAN LIFE ASR.	1995/04/30	119.92%	APN	ASPEN PHMCR.	1998/04/30	1103.46%
ADH	ADVTECH	2003/01/31	134.07%	AFI	AFRICAN LIFE ASR.	1995/07/31	117.73%	APN	ASPEN PHMCR.	1998/05/31	722.10%
ADH	ADVTECH	2003/02/28	142.45%	AFI	AFRICAN LIFE ASR.	1995/08/31	111.46%	APN	ASPEN PHMCR.	1998/06/30	112.50%
ADH	ADVTECH	2003/03/31	141.89%	AFI	AFRICAN LIFE ASR.	1995/09/30	139.24%	APN	ASPEN PHMCR.	1998/08/31	115.21%
ADH	ADVTECH	2003/04/30	121.34%	AFI	AFRICAN LIFE ASR.	1995/10/31	101.33%	APN	ASPEN PHMCR.	1998/09/30	105.51%
AFE	AECI	1998/09/30	100.13%	AFI	AFRICAN LIFE ASR.	1995/11/30	108.09%	ARL	ASTRAL FOODS	2002/10/31	106.66%
AFE	AECI	1998/12/31	103.76%	AFI	AFRICAN LIFE ASR.	1996/05/31	131.05%	ARL	ASTRAL FOODS	2003/03/31	151.33%
AFE	AECI	1999/01/31	143.54%	AFI	AFRICAN LIFE ASR.	1996/06/30	160.65%	ARL	ASTRAL FOODS	2003/04/30	163.74%
AFE	AECI	1999/02/28	129.46%	AFI	AFRICAN LIFE ASR.	1996/07/31	171.80%	ARL	ASTRAL FOODS	2003/06/30	107.95%
AFE	AECI	1999/03/31	101.76%	AFI	AFRICAN LIFE ASR.	1996/08/31	172.94%	ARL	ASTRAL FOODS	2003/11/30	102.93%
AFR	AFGRI	2000/04/30	233.69%	AFI	AFRICAN LIFE ASR.	1996/09/30	140.29%	ARL	ASTRAL FOODS	2003/12/31	128.48%
AFR	AFGRI	2000/05/31	259.19%	AFI	AFRICAN LIFE ASR.	1996/10/31	134.86%	APK	ASTRAPAK	2000/08/31	109.75%
AFR	AFGRI	2000/06/30	251.91%	AFI	AFRICAN LIFE ASR.	1996/11/30	158.00%	APK	ASTRAPAK	2000/09/30	127.04%
AFR	AFGRI	2000/07/31	264.59%	AFI	AFRICAN LIFE ASR.	1996/12/31	188.72%	APK	ASTRAPAK	2000/10/31	147.57%
AFR	AFGRI	2000/08/31	295.28%	AFI	AFRICAN LIFE ASR.	1997/01/31	187.82%	APK	ASTRAPAK	2000/11/30	130.11%
AFR	AFGRI	2000/09/30	315.36%	AFI	AFRICAN LIFE ASR.	1997/02/28	166.64%	APK	ASTRAPAK	2000/12/31	136.10%
AFR	AFGRI	2000/10/31	295.18%	AFI	AFRICAN LIFE ASR.	1997/03/31	147.40%	APK	ASTRAPAK	2002/10/31	109.65%
AFR	AFGRI	2000/11/30	300.61%	AFI	AFRICAN LIFE ASR.	1997/04/30	142.34%	APK	ASTRAPAK	2003/01/31	108.57%
AFR	AFGRI	2000/12/31	257.50%	AFI	AFRICAN LIFE ASR.	1997/05/31	132.48%	APK	ASTRAPAK	2003/03/31	101.88%
AFR	AFGRI	2001/01/31	236.51%	AFI	AFRICAN LIFE ASR.	1997/06/30	102.66%	APK	ASTRAPAK	2003/04/30	117.39%
AFR	AFGRI	2001/02/28	194.85%	AFI	AFRICAN LIFE ASR.	1997/07/31	114.26%	AVI	AVI	1998/09/30	137.75%
AFR	AFGRI	2001/03/31	244.43%	AFB	ALEXANDER FORBES	1998/12/31	100.08%	AVI	AVI	1998/10/31	187.46%
AFL	AFLEASE GD.& UR.RES.	1995/07/31	179.90%	ALT	ALLIED TECHNOLOGIES	1998/07/31	101.67%	AVI	AVI	1998/11/30	113.05%
AFL	AFLEASE GD.& UR.RES.	1995/08/31	154.59%	ALT	ALLIED TECHNOLOGIES	1998/09/30	118.87%	AVI	AVI	1998/12/31	127.78%
AFL	AFLEASE GD.& UR.RES.	1995/09/30	140.04%	ALT	ALLIED TECHNOLOGIES	1998/10/31	108.31%	AVI	AVI	1999/01/31	158.71%
AFL	AFLEASE GD.& UR.RES.	1995/11/30	175.05%	ALT	ALLIED TECHNOLOGIES	1998/11/30	166.76%	AVI	AVI	1999/02/28	122.14%
AFL	AFLEASE GD.& UR.RES.	1995/12/31	144.44%	ALT	ALLIED TECHNOLOGIES	1998/12/31	190.97%	AVI	AVI	1999/03/31	132.88%
AFL	AFLEASE GD.& UR.RES.	1996/01/31	100.00%	ALT	ALLIED TECHNOLOGIES	1997/01/31	172.85%	AVI	AVI	1999/04/30	143.44%
AFL	AFLEASE GD.& UR.RES.	1996/02/29	100.00%	ALT	ALLIED TECHNOLOGIES	1997/02/28	129.95%	AVI	AVI	1999/05/31	182.01%
AFL	AFLEASE GD.& UR.RES.	1996/06/30	102.68%	ALT	ALLIED TECHNOLOGIES	1997/03/31	128.06%	AVI	AVI	1999/06/30	119.81%
AFL	AFLEASE GD.& UR.RES.	1997/12/31	115.35%	ALT	ALLIED TECHNOLOGIES	1997/04/30	157.86%	BAW	BARLOWORLD	1998/12/31	104.31%
AFL	AFLEASE GD.& UR.RES.	1998/02/28	130.02%	ALT	ALLIED TECHNOLOGIES	1999/10/31	105.67%	BJM	BARNARD JAC.MELLET	1998/06/30	102.44%
AFL	AFLEASE GD.& UR.RES.	2001/01/31	138.58%	AMA	AMAL.APPC.	1997/05/31	113.79%	BJM	BARNARD JAC.MELLET	1998/07/31	113.75%
AFL	AFLEASE GD.& UR.RES.	2001/02/28	149.98%	AMA	AMAL.APPC.	2001/09/30	103.83%	BJM	BARNARD JAC.MELLET	1998/08/31	158.20%
AFL	AFLEASE GD.& UR.RES.	2001/03/31	137.22%	AMA	AMAL.APPC.	2001/12/31	108.07%	BJM	BARNARD JAC.MELLET	1998/09/30	103.76%
AFL	AFLEASE GD.& UR.RES.	2001/04/30	108.65%	AMA	AMAL.APPC.	2002/01/31	143.00%	BPL	BARPLATS INVS.	1997/09/30	147.62%
AFL	AFLEASE GD.& UR.RES.	2001/05/31	329.65%	AMA	AMAL.APPC.	2002/09/30	106.15%	BPL	BARPLATS INVS.	1997/12/31	133.33%
AFL	AFLEASE GD.& UR.RES.	2001/06/30	353.59%	AMA	AMAL.APPC.	2002/10/31	135.22%	BPL	BARPLATS INVS.	1998/01/31	163.64%
AFL	AFLEASE GD.& UR.RES.	2001/07/31	190.25%	AMA	AMAL.APPC.	2002/11/30	122.97%	BPL	BARPLATS INVS.	1998/02/28	306.25%
AFL	AFLEASE GD.& UR.RES.	2001/08/31	165.73%	AMA	AMAL.APPC.	2002/12/31	161.91%	BPL	BARPLATS INVS.	1998/03/31	238.10%
AFL	AFLEASE GD.& UR.RES.	2001/09/30	145.84%	AMA	AMAL.APPC.	2003/01/31	172.15%	BPL	BARPLATS INVS.	1998/04/30	266.67%
AFL	AFLEASE GD.& UR.RES.	2001/10/31	175.02%	AMA	AMAL.APPC.	2003/02/28	156.93%	BPL	BARPLATS INVS.	1998/05/31	233.33%
AFL	AFLEASE GD.& UR.RES.	2001/11/30	186.81%	AMA	AMAL.APPC.	2003/03/31	199.71%	BPL	BARPLATS INVS.	1998/06/30	423.61%
AFL	AFLEASE GD.& UR.RES.	2001/12/31	165.68%	AMA	AMAL.APPC.	2003/04/30	183.31%	BPL	BARPLATS INVS.	1998/07/31	361.90%
AFL	AFLEASE GD.& UR.RES.	2002/01/31	108.08%	AMA	AMAL.APPC.	2003/05/31	191.24%	BPL	BARPLATS INVS.	1998/08/31	243.75%
ARI	AFN.RAINBOW MRLS.	1998/06/31	115.08%	AMA	AMAL.APPC.	2003/06/30	203.85%	BPL	BARPLATS INVS.	1998/09/30	121.15%
ARI	AFN.RAINBOW MRLS.	1998/10/31	110.42%	AMA	AMAL.APPC.	2003/07/31	200.72%	BPL	BARPLATS INVS.	1998/10/31	228.13%
ARI	AFN.RAINBOW MRLS.	1998/11/30	121.05%	AMA	AMAL.APPC.	2003/08/31	150.30%	BPL	BARPLATS INVS.	1998/11/30	176.19%
ARI	AFN.RAINBOW MRLS.	1998/12/31	202.75%	AMA	AMAL.APPC.	2003/09/30	151.66%	BPL	BARPLATS INVS.	1998/12/31	345.24%
ARI	AFN.RAINBOW MRLS.	1999/01/31	135.52%	AMA	AMAL.APPC.	2003/10/31	128.30%	BPL	BARPLATS INVS.	1999/01/31	287.93%
ARI	AFN.RAINBOW MRLS.	1999/02/28	100.01%	AMA	AMAL.APPC.	2003/11/30	161.80%	BPL	BARPLATS INVS.	1999/02/28	181.54%
ABL	AFRICAN BANK INVS.	1995/01/31	1926.50%	AMA	AMAL.APPC.	2003/12/31	129.03%	BPL	BARPLATS INVS.	1999/03/31	136.82%
ABL	AFRICAN BANK INVS.	1995/02/28	476.63%	AGL	ANGLO AMERICAN (JSE)	1998/08/31	113.35%	BPL	BARPLATS INVS.	1999/04/30	135.06%
ABL	AFRICAN BANK INVS.	1995/03/31	407.44%	AGL	ANGLO AMERICAN (JSE)	1998/09/30	108.31%	BPL	BARPLATS INVS.	1999/10/31	120.95%
ABL	AFRICAN BANK INVS.	1995/04/30	308.54%	AGL	ANGLO AMERICAN (JSE)	1998/11/30	106.70%	BPL	BARPLATS INVS.	1999/11/30	186.21%
ABL	AFRICAN BANK INVS.	1995/05/31	263.79%	AGL	ANGLO AMERICAN (JSE)	1998/12/31	144.61%	BPL	BARPLATS INVS.	2000/05/31	110.08%
ABL	AFRICAN BANK INVS.	1995/06/30	308.77%	AGL	ANGLO AMERICAN (JSE)	1999/01/31	111.74%	BPL	BARPLATS INVS.	2000/06/30	106.20%
ABL	AFRICAN BANK INVS.	1995/07/31	252.36%	AMS	ANGLO AMERICAN PLAT.	1998/06/30	127.84%	BPL	BARPLATS INVS.	2003/08/31	191.07%
ABL	AFRICAN BANK INVS.	1995/08/31	210.77%	AMS	ANGLO AMERICAN PLAT.	1998/10/31	116.79%	BPL	BARPLATS INVS.	2003/09/30	124.83%
ABL	AFRICAN BANK INVS.	1995/09/30	175.76%	AMS	ANGLO AMERICAN PLAT.	1998/11/30	109.34%	BPL	BARPLATS INVS.	2003/10/31	180.67%
ABL	AFRICAN BANK INVS.	1995/10/31	119.65%	AMS	ANGLO AMERICAN PLAT.	1998/12/31	141.24%	BPL	BARPLATS INVS.	2003/11/30	327.03%
ABL	AFRICAN BANK INVS.	1995/11/30	144.81%	AMS	ANGLO AMERICAN PLAT.	1999/01/31	121.01%	BPL	BARPLATS INVS.	2003/12/31	421.54%
ABL	AFRICAN BANK INVS.	1995/12/31	148.65%	AMS	ANGLO AMERICAN PLAT.	1999/06/31	106.84%	BRM	BEARING MAN	1995/03/31	214.92%
ABL	AFRICAN BANK INVS.	1996/01/31	117.39%	AMS	ANGLO AMERICAN PLAT.	2000/01/31	101.06%	BRM	BEARING MAN	1995/04/30	243.58%
ABL	AFRICAN BANK INVS.	1996/02/29	150.00%	AMS	ANGLO AMERICAN PLAT.	2000/02/29	117.29%	BRM	BEARING MAN	1995/05/31	170.53%
ABL	AFRICAN BANK INVS.	1996/03/31	207.90%	AMS	ANGLO AMERICAN PLAT.	2000/04/30	136.67%	BRM	BEARING MAN	1995/06/30	230.15%
ABL	AFRICAN BANK INVS.	1996/04/30	227.39%	AMS	ANGLO AMERICAN PLAT.	2000/05/31	134.63%	BRM	BEARING MAN	1995/07/31	228.16%
ABL	AFRICAN BANK INVS.	1996/05/31	269.96%	ANG	ANGLOGOLD ASHANTI	1995/05/31	100.73%	BRM	BEARING MAN	1995/08/31	197.67%
ABL	AFRICAN BANK INVS.	1996/06/30	340.60%	ANG	ANGLOGOLD ASHANTI	2000/12/31	100.69%	BRM	BEARING MAN	1995/09/30	181.93%

Appendix A.4. Sample Extreme Winners Sorted by Company

Continued.

Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return
BRM	BEARING MAN	1995/10/31	213.90%	CPL	CAPITAL PROPERTY FD.	1998/08/31	108.05%	CNC	CONCOR	1995/02/28	132.27%
BRM	BEARING MAN	1995/11/30	259.13%	CPL	CAPITAL PROPERTY FD.	1998/09/30	120.26%	CNC	CONCOR	1995/03/31	114.35%
BRM	BEARING MAN	1995/12/31	250.98%	CPL	CAPITAL PROPERTY FD.	1998/10/31	124.14%	CNC	CONCOR	2001/03/31	105.88%
BRM	BEARING MAN	1996/01/31	204.35%	CPL	CAPITAL PROPERTY FD.	1998/11/30	104.67%	CNC	CONCOR	2001/04/30	181.24%
BRM	BEARING MAN	1996/02/29	284.71%	CPL	CAPITAL PROPERTY FD.	1998/12/31	109.21%	CNC	CONCOR	2001/05/31	122.22%
BRM	BEARING MAN	1998/12/31	113.35%	CPI	CAPITEC BANK	2002/02/28	166.15%	CNC	CONCOR	2001/09/30	117.86%
BRM	BEARING MAN	1999/01/31	134.80%	CPI	CAPITEC BANK	2002/03/31	189.96%	CCT	CONNECTION GP.	1999/10/31	101.15%
BRM	BEARING MAN	1999/03/31	107.37%	CPI	CAPITEC BANK	2002/05/31	179.14%	CCT	CONNECTION GP.	2001/10/31	108.78%
BRM	BEARING MAN	2000/05/31	128.95%	CPI	CAPITEC BANK	2002/06/30	215.03%	CCT	CONNECTION GP.	2002/11/30	151.64%
BRM	BEARING MAN	2001/09/30	142.82%	CPI	CAPITEC BANK	2002/07/31	199.77%	CCT	CONNECTION GP.	2002/12/31	174.17%
BRM	BEARING MAN	2001/10/31	127.72%	CPI	CAPITEC BANK	2002/08/31	129.88%	CCT	CONNECTION GP.	2003/01/31	223.05%
BRM	BEARING MAN	2001/12/31	115.75%	CPI	CAPITEC BANK	2002/09/30	129.88%	CCT	CONNECTION GP.	2003/02/28	143.71%
BEL	BELL EQUIPMENT	1998/07/31	126.01%	CPI	CAPITEC BANK	2002/10/31	109.47%	CCT	CONNECTION GP.	2003/03/31	158.82%
BEL	BELL EQUIPMENT	1998/08/31	131.79%	CPI	CAPITEC BANK	2002/12/31	109.90%	CCT	CONNECTION GP.	2003/04/30	146.69%
BEL	BELL EQUIPMENT	1998/09/30	142.78%	CPI	CAPITEC BANK	2003/01/31	126.99%	CCT	CONNECTION GP.	2003/05/31	137.27%
BEL	BELL EQUIPMENT	1998/10/31	140.11%	CPI	CAPITEC BANK	2003/02/28	133.70%	CCT	CONNECTION GP.	2003/06/30	132.94%
BEL	BELL EQUIPMENT	1998/11/30	171.49%	CPI	CAPITEC BANK	2003/03/31	164.08%	CCT	CONNECTION GP.	2003/07/31	135.89%
BEL	BELL EQUIPMENT	1999/02/28	126.93%	CPI	CAPITEC BANK	2003/09/30	148.62%	CCT	CONNECTION GP.	2003/09/30	115.29%
BEL	BELL EQUIPMENT	1999/03/31	156.93%	CPI	CAPITEC BANK	2003/10/31	158.54%	CCT	CONNECTION GP.	2003/10/31	104.30%
BEL	BELL EQUIPMENT	1999/04/30	113.69%	CPI	CAPITEC BANK	2003/11/30	200.93%	CCT	CONNECTION GP.	2003/12/31	101.35%
BEL	BELL EQUIPMENT	1999/05/31	272.10%	CPI	CAPITEC BANK	2003/12/31	158.00%	CNL	CONTROL INSTRUMENTS GP.	1995/02/28	128.58%
BEL	BELL EQUIPMENT	1999/06/30	364.60%	CRG	CARGO CARRIERS	2001/05/31	109.10%	CNL	CONTROL INSTRUMENTS GP.	1995/03/31	123.20%
BEL	BELL EQUIPMENT	1999/07/31	306.91%	CRG	CARGO CARRIERS	2001/06/30	112.95%	CNL	CONTROL INSTRUMENTS GP.	1995/06/30	131.62%
BEL	BELL EQUIPMENT	1999/08/31	349.63%	CRG	CARGO CARRIERS	2001/07/31	126.97%	CNL	CONTROL INSTRUMENTS GP.	1995/07/31	112.76%
BEL	BELL EQUIPMENT	1999/09/30	306.18%	CRG	CARGO CARRIERS	2001/08/31	124.09%	CNL	CONTROL INSTRUMENTS GP.	1995/08/31	104.11%
BEL	BELL EQUIPMENT	1999/10/31	236.84%	CRG	CARGO CARRIERS	2001/09/30	186.30%	CNL	CONTROL INSTRUMENTS GP.	2002/02/28	123.69%
BEL	BELL EQUIPMENT	1999/11/30	100.65%	CRG	CARGO CARRIERS	2001/10/31	148.39%	CNL	CONTROL INSTRUMENTS GP.	2003/06/30	169.31%
BIL	BHP BILLITON (JSE)	1998/08/31	147.50%	CRG	CARGO CARRIERS	2001/11/30	153.44%	CNL	CONTROL INSTRUMENTS GP.	2003/07/31	142.39%
BIL	BHP BILLITON (JSE)	1998/10/31	101.79%	CRG	CARGO CARRIERS	2001/12/31	102.83%	CPA	CORPCAPITAL	1995/07/31	143.06%
BIL	BHP BILLITON (JSE)	1998/11/30	149.00%	CRG	CARGO CARRIERS	2002/01/31	191.50%	CPA	CORPCAPITAL	1995/08/31	122.95%
BIL	BHP BILLITON (JSE)	1998/12/31	211.47%	CRG	CARGO CARRIERS	2002/02/28	164.23%	CPA	CORPCAPITAL	1995/09/30	306.42%
BIL	BHP BILLITON (JSE)	1999/01/31	193.83%	CRG	CARGO CARRIERS	2002/03/31	171.88%	CPA	CORPCAPITAL	1995/10/31	144.56%
BIL	BHP BILLITON (JSE)	1999/02/28	115.01%	CRG	CARGO CARRIERS	2002/04/30	222.48%	CPA	CORPCAPITAL	1996/03/31	484.38%
BIL	BHP BILLITON (JSE)	1999/03/31	114.91%	CRG	CARGO CARRIERS	2003/09/30	110.83%	CPA	CORPCAPITAL	1996/04/30	121.38%
BIL	BHP BILLITON (JSE)	2000/12/31	120.78%	CSB	CASHBUILD	1999/02/28	106.95%	CPA	CORPCAPITAL	1997/05/31	181.39%
BVT	BIDVEST GROUP	1997/03/31	103.80%	CSB	CASHBUILD	1999/03/31	129.03%	CPA	CORPCAPITAL	1997/06/30	166.90%
BAT	BRAIT SA. (JSE)	1997/05/31	141.66%	CSB	CASHBUILD	1999/04/30	102.14%	CPA	CORPCAPITAL	1997/07/31	174.52%
BAT	BRAIT SA. (JSE)	1997/06/30	154.14%	CSB	CASHBUILD	2000/09/30	121.96%	CPA	CORPCAPITAL	2002/07/31	102.30%
BAT	BRAIT SA. (JSE)	1997/07/31	141.66%	CSB	CASHBUILD	2000/10/31	275.76%	CPA	CORPCAPITAL	2002/08/31	128.87%
BRC	BRANDCORP	1995/03/31	101.22%	CSB	CASHBUILD	2000/11/30	324.07%	CPA	CORPCAPITAL	2002/09/30	141.42%
BRC	BRANDCORP	1997/04/30	154.55%	CSB	CASHBUILD	2000/12/31	313.33%	CPA	CORPCAPITAL	2003/01/31	110.36%
BRC	BRANDCORP	2001/09/30	102.05%	CSB	CASHBUILD	2001/01/31	266.80%	CUL	CULLINAN	2001/03/31	149.15%
BRC	BRANDCORP	2001/10/31	104.40%	CSB	CASHBUILD	2001/02/28	131.76%	CUL	CULLINAN	2001/04/30	149.15%
BRC	BRANDCORP	2001/11/30	129.67%	CSB	CASHBUILD	2001/03/31	186.44%	CUL	CULLINAN	2001/05/31	174.58%
BRC	BRANDCORP	2001/12/31	131.99%	CSB	CASHBUILD	2001/04/30	171.86%	CUL	CULLINAN	2001/06/30	174.58%
BRC	BRANDCORP	2002/01/31	114.01%	CSB	CASHBUILD	2001/05/31	135.70%	CUL	CULLINAN	2001/07/31	139.19%
BRC	BRANDCORP	2002/02/28	155.66%	CSB	CASHBUILD	2001/06/30	112.35%	CUL	CULLINAN	2001/08/31	157.28%
BRC	BRANDCORP	2002/03/31	126.23%	CSB	CASHBUILD	2001/07/31	116.93%	CUL	CULLINAN	2001/09/30	400.00%
BRC	BRANDCORP	2002/04/30	103.58%	CSB	CASHBUILD	2001/08/31	114.79%	CUL	CULLINAN	2001/10/31	470.45%
BRC	BRANDCORP	2002/07/31	112.42%	CSB	CASHBUILD	2001/09/30	125.73%	CUL	CULLINAN	2001/11/30	425.42%
BRC	BRANDCORP	2002/12/31	109.43%	CSB	CASHBUILD	2001/10/31	104.96%	CUL	CULLINAN	2001/12/31	374.58%
BRC	BRANDCORP	2003/01/31	142.84%	CSB	CASHBUILD	2001/11/30	138.40%	CUL	CULLINAN	2002/01/31	268.18%
BRC	BRANDCORP	2003/02/28	105.63%	CSB	CASHBUILD	2001/12/31	145.97%	CUL	CULLINAN	2002/02/28	268.18%
BRC	BRANDCORP	2003/03/31	118.83%	CSB	CASHBUILD	2002/01/31	136.09%	CUL	CULLINAN	2002/03/31	110.88%
BRC	BRANDCORP	2003/04/30	129.24%	CSB	CASHBUILD	2002/02/28	236.18%	CUL	CULLINAN	2002/05/31	146.30%
BRC	BRANDCORP	2003/05/31	110.90%	CSB	CASHBUILD	2002/03/31	235.18%	CUL	CULLINAN	2002/06/30	136.42%
BRC	BRANDCORP	2003/06/30	117.88%	CSB	CASHBUILD	2002/04/30	221.77%	CUL	CULLINAN	2002/07/31	133.90%
BRC	BRANDCORP	2003/07/31	105.44%	CSB	CASHBUILD	2002/05/31	200.34%	CUL	CULLINAN	2002/12/31	118.93%
BRC	BRANDCORP	2003/08/31	115.54%	CSB	CASHBUILD	2002/06/30	253.83%	CUL	CULLINAN	2003/04/30	108.30%
BRC	BRANDCORP	2003/09/30	137.80%	CSB	CASHBUILD	2002/07/31	277.05%	DCT	DATACENTRIX	1998/10/31	149.90%
BRC	BRANDCORP	2003/11/30	106.02%	CSB	CASHBUILD	2002/08/31	183.83%	DCT	DATACENTRIX	1998/11/30	119.98%
BRN	BRIMSTONE INV.'N'	2001/10/31	103.64%	CSB	CASHBUILD	2002/09/30	143.11%	DCT	DATACENTRIX	1998/12/31	288.90%
BRN	BRIMSTONE INV.'N'	2002/02/28	104.48%	CSB	CASHBUILD	2002/10/31	186.67%	DTC	DATATEC	1995/01/31	413.97%
BRN	BRIMSTONE INV.'N'	2002/03/31	104.48%	CSB	CASHBUILD	2002/11/30	135.55%	DTC	DATATEC	1995/02/28	362.49%
BRN	BRIMSTONE INV.'N'	2002/04/30	173.68%	CSB	CASHBUILD	2002/12/31	141.19%	DTC	DATATEC	1995/03/31	384.65%
BRN	BRIMSTONE INV.'N'	2002/06/30	113.10%	CAT	CAXTON CTP PUBLISH PRINT	1995/01/31	113.78%	DTC	DATATEC	1995/04/30	354.31%
BRN	BRIMSTONE INV.'N'	2002/11/30	150.00%	CAT	CAXTON CTP PUBLISH PRINT	1995/02/28	127.82%	DTC	DATATEC	1995/05/31	341.20%
BRN	BRIMSTONE INV.'N'	2002/12/31	127.12%	CAT	CAXTON CTP PUBLISH PRINT	1995/03/31	119.42%	DTC	DATATEC	1995/06/30	472.73%
BRN	BRIMSTONE INV.'N'	2003/02/28	111.68%	CAT	CAXTON CTP PUBLISH PRINT	1995/04/30	101.81%	DTC	DATATEC	1995/07/31	460.47%
BCX	BUSINESS CONNEXION GROUP	1995/03/31	101.34%	CRM	CERAMIC INDUSTRIES	1996/07/31	105.07%	DTC	DATATEC	1995/08/31	275.24%
BCX	BUSINESS CONNEXION GROUP	1995/04/30	235.50%	CRM	CERAMIC INDUSTRIES	1996/08/31	226.18%	DTC	DATATEC	1995/09/30	259.69%
BCX	BUSINESS CONNEXION GROUP	1995/05/31	232.73%	CRM	CERAMIC INDUSTRIES	1996/09/30	241.74%	DTC	DATATEC	1995/10/31	190.84%
BCX	BUSINESS CONNEXION GROUP	1995/06/30	232.84%	CRM	CERAMIC INDUSTRIES	1996/10/31	234.14%	DTC	DATATEC	1995/11/30	110.80%
BCX	BUSINESS CONNEXION GROUP	1995/07/31	258.24%	CRM	CERAMIC INDUSTRIES	1996/11/30	190.43%	DTC	DATATEC	1995/12/31	104.33%
BCX	BUSINESS CONNEXION GROUP	1995/08/31	298.18%	CRM	CERAMIC INDUSTRIES	1996/12/31	204.04%	DTC	DATATEC	1996/02/29	148.26%
BCX	BUSINESS CONNEXION GROUP	1995/09/30	305.96%	CRM	CERAMIC INDUSTRIES	1997/01/31	207.99%	DTC	DATATEC	1996/03/31	121.30%
BCX	BUSINESS CONNEXION GROUP	1995/10/31	338.60%	CRM	CERAMIC INDUSTRIES	1997/02/28	200.94%	DTC	DATATEC	1996/04/30	152.40%
BCX	BUSINESS CONNEXION GROUP	1995/11/30	323.62%	CRM	CERAMIC INDUSTRIES	1997/03/31	222.92%	DTC	DATATEC	1996/05/31	156.96%
BCX	BUSINESS CONNEXION GROUP	1995/12/31	378.07%	CRM	CERAMIC INDUSTRIES	1997/04/30	208.28%	DTC	DATATEC	1996/06/30	137.18%
BCX	BUSINESS CONNEXION GROUP	1996/01/31	320.01%	CRM	CERAMIC INDUSTRIES	1997/05/31	216.87%	DTC	DATATEC	1996/07/31	148.23%
BCX	BUSINESS CONNEXION GROUP	1996/02/29	228.50%	CRM	CERAMIC INDUSTRIES	1997/06/30	119.64%	DTC	DATATEC	1996/08/31	141.66%
BCX	BUSINESS CONNEXION GROUP	1996/03/31	193.00%	CLH	CITY LODGE HOTELS	1998/09/30	120.18%	DTC	DATATEC	1996/09/30	171.28%
BCX	BUSINESS CONNEXION GROUP	1997/05/31	117.61%	CLH	CITY LODGE HOTELS	2001/12/31	105.10%	DTC	DATATEC	1996/10/31	140.43%
BCX	BUSINESS CONNEXION GROUP	1997/11/30	106.33%	CLE	CLIENTELE LF.ASR.	1997/09/30	117.30%	DTC	DATATEC	1996/11/30	146.59%
BTG	BYTES TECH.GP.	1996/08/31	197.55%	CLE	CLIENTELE LF.ASR.	2003/11/30	108.35%	DTC	DATATEC	1996/12/31	157.32%
BTG	BYTES TECH.GP.	1996/09/30	169.87%	CLE	CLIENTELE LF.ASR.	2003/12/31	116.70%	DTC	DATATEC	1997/01/31	159.19%
BTG	BYTES TECH.GP.	1996/10/31	133.16%	COM	COMAIR	1998/11/30	126.38%	DTC	DATATEC	1997/02/28	180.35%
BTG	BYTES TECH.GP.	1996/11/30	131.79%	COM	COMAIR	1998/12/31	110.92%	DTC	DATATEC	1997/03/31	259.49%
BTG	BYTES TECH.GP.	1996/12/31	127.76%	COM	COMAIR	1999/01/31	165.27%	DTC	DATATEC	1997/04/30	317.48%
BTG	BYTES TECH.GP.	1997/01/31	253.80%	COM	COMAIR	1999/02/28	143.68%	DTC	DATATEC	1997/05/31	292.38%
BTG	BYTES TECH.GP.	1997/02/28	821.79%	CMH	COMBINED MOTOR	1995/01/31	709.12%	DTC	DATATEC	1997/06/30	233.96%
BTG	BYTES TECH.GP.	1997/03/31	791.03%	CMH	COMBINED MOTOR	1995/02/28	164.29%	DTC	DATATEC	1997/07/31	265.82%
BTG	BYTES TECH.GP.	1997/04/30	1555.59%	CMH	COMBINED MOTOR	1995/03/31	149.91%	DTC	DATATEC	1997/08/31	143.09%
BTG	BYTES TECH.GP.	1997/05/31	1160.94%	CMH	COMBINED MOTOR	1995/04/30	136.27%	DTC	DATATEC	1997/10/31	157.32%
BTG	BYTES TECH.GP.	1997/06/30	517.07%	CMH	COMBINED MOTOR	1998/12/31	113.35%	DTC	DATATEC	2002/12/31	103.71%
BTG	BYTES TECH.GP.	1997/07/31	440.29%	CMH	COMBINED MOTOR	2003/11/30	117.00%	DTC	DATATEC	2003/01/31	167.09%
BTG	BYTES TECH.GP.	1997/10/31	197.27%	CMH	COMBINED MOTOR	2003/12/31	132.32%	DTC	DATATEC	2003/02/28	195.96%
BTG	BYTES TECH.GP.	1997/12/31	100.22%	CNC	CONCOR	1995/01/31	115.55%	DTC	DATATEC	2003/03/31	294.61%

Appendix A.4. Sample Extreme Winners Sorted by Company

Continued.

Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return
DTC	DATATEC	2003/04/30	188.71%	DAW	DS.& WHSG.NETWORK	2003/03/31	162.26%	FSR	FIRSTRAND	1996/08/31	110.88%
DGC	DIGICORE	2002/10/31	106.33%	DAW	DS.& WHSG.NETWORK	2003/04/30	167.13%	FSR	FIRSTRAND	1996/12/31	102.64%
DGC	DIGICORE	2002/12/31	147.39%	DAW	DS.& WHSG.NETWORK	2003/05/31	143.83%	FSR	FIRSTRAND	1997/01/31	133.42%
DGC	DIGICORE	2003/01/31	168.10%	DAW	DS.& WHSG.NETWORK	2003/06/30	167.89%	FSR	FIRSTRAND	1997/02/28	133.23%
DGC	DIGICORE	2003/02/28	163.36%	DAW	DS.& WHSG.NETWORK	2003/07/31	271.79%	FOS	FOSCHINI	1998/08/31	113.82%
DGC	DIGICORE	2003/03/31	126.10%	DAW	DS.& WHSG.NETWORK	2003/08/31	188.73%	FOS	FOSCHINI	1998/12/31	138.52%
DGC	DIGICORE	2003/04/30	147.45%	DAW	DS.& WHSG.NETWORK	2003/09/30	305.31%	FOS	FOSCHINI	2003/11/30	101.86%
DGC	DIGICORE	2003/05/31	143.43%	DAW	DS.& WHSG.NETWORK	2003/10/31	215.90%	FOS	FOSCHINI	2003/12/31	109.16%
DGC	DIGICORE	2003/06/30	182.89%	DAW	DS.& WHSG.NETWORK	2003/11/30	242.65%	FRO	FRONTRANGE SLTN.	1997/09/30	838.43%
DGC	DIGICORE	2003/07/31	173.94%	DAW	DS.& WHSG.NETWORK	2003/12/31	223.50%	FRO	FRONTRANGE SLTN.	1997/10/31	730.00%
DGC	DIGICORE	2003/08/31	141.56%	ECO	EDGARS CONS.STORES	1998/08/31	137.79%	FRO	FRONTRANGE SLTN.	1997/11/30	792.63%
DGC	DIGICORE	2003/09/30	236.04%	ECO	EDGARS CONS.STORES	1998/09/30	170.05%	FRO	FRONTRANGE SLTN.	1997/12/31	678.32%
DGC	DIGICORE	2003/10/31	201.32%	ECO	EDGARS CONS.STORES	1998/10/31	141.37%	FRO	FRONTRANGE SLTN.	1998/01/31	791.70%
DGC	DIGICORE	2003/11/30	247.49%	ECO	EDGARS CONS.STORES	1998/11/30	234.29%	FRO	FRONTRANGE SLTN.	1998/02/28	188.89%
DGC	DIGICORE	2003/12/31	254.79%	ECO	EDGARS CONS.STORES	1998/12/31	350.53%	FRO	FRONTRANGE SLTN.	1998/03/31	136.48%
DDT	DIMENSION DATA HDG.(JSE)	1995/01/31	179.44%	ECO	EDGARS CONS.STORES	1999/01/31	285.55%	FRO	FRONTRANGE SLTN.	1998/12/31	108.84%
DDT	DIMENSION DATA HDG.(JSE)	1995/02/28	165.06%	ECO	EDGARS CONS.STORES	1999/02/28	150.50%	FRO	FRONTRANGE SLTN.	2001/09/30	255.64%
DDT	DIMENSION DATA HDG.(JSE)	1995/03/31	145.46%	ECO	EDGARS CONS.STORES	1999/03/31	126.20%	FRO	FRONTRANGE SLTN.	2001/10/31	129.72%
DDT	DIMENSION DATA HDG.(JSE)	1995/04/30	149.17%	ECO	EDGARS CONS.STORES	1999/04/30	112.02%	FRO	FRONTRANGE SLTN.	2002/02/28	325.75%
DDT	DIMENSION DATA HDG.(JSE)	1995/05/31	160.21%	ECO	EDGARS CONS.STORES	2001/12/31	111.26%	FRO	FRONTRANGE SLTN.	2003/01/31	102.40%
DDT	DIMENSION DATA HDG.(JSE)	1995/06/30	200.80%	ECO	EDGARS CONS.STORES	2002/01/31	153.05%	FRO	FRONTRANGE SLTN.	2003/04/30	114.84%
DDT	DIMENSION DATA HDG.(JSE)	1995/07/31	213.72%	ECO	EDGARS CONS.STORES	2002/02/28	133.39%	FRO	FRONTRANGE SLTN.	2003/05/31	199.90%
DDT	DIMENSION DATA HDG.(JSE)	1995/08/31	227.21%	ECO	EDGARS CONS.STORES	2002/03/31	117.00%	FRO	FRONTRANGE SLTN.	2003/06/30	140.00%
DDT	DIMENSION DATA HDG.(JSE)	1995/09/30	195.74%	ECO	EDGARS CONS.STORES	2002/04/30	104.16%	FRO	FRONTRANGE SLTN.	2003/07/31	168.38%
DDT	DIMENSION DATA HDG.(JSE)	1995/10/31	174.66%	ECO	EDGARS CONS.STORES	2002/06/30	113.69%	FRO	FRONTRANGE SLTN.	2003/08/31	185.71%
DDT	DIMENSION DATA HDG.(JSE)	1995/11/30	186.19%	ECO	EDGARS CONS.STORES	2002/07/31	134.00%	FRO	FRONTRANGE SLTN.	2003/09/30	177.15%
DDT	DIMENSION DATA HDG.(JSE)	1995/12/31	186.46%	ECO	EDGARS CONS.STORES	2002/08/31	131.32%	FRO	FRONTRANGE SLTN.	2003/10/31	148.83%
DDT	DIMENSION DATA HDG.(JSE)	1996/01/31	202.94%	ECO	EDGARS CONS.STORES	2002/09/30	147.25%	FRO	FRONTRANGE SLTN.	2003/11/30	139.95%
DDT	DIMENSION DATA HDG.(JSE)	1996/02/29	136.36%	ECO	EDGARS CONS.STORES	2002/10/31	176.71%	GIJ	GIJIMA AST GROUP	1998/09/30	105.51%
DDT	DIMENSION DATA HDG.(JSE)	1996/03/31	168.52%	ECO	EDGARS CONS.STORES	2002/11/30	152.15%	GMB	GLENRAND M I B	2003/05/31	108.66%
DDT	DIMENSION DATA HDG.(JSE)	1996/04/30	150.84%	ECO	EDGARS CONS.STORES	2002/12/31	161.80%	GFI	GOLD FIELDS	2000/11/30	126.77%
DDT	DIMENSION DATA HDG.(JSE)	1996/05/31	132.14%	ECO	EDGARS CONS.STORES	2003/01/31	108.56%	GFI	GOLD FIELDS	2000/12/31	135.25%
DDT	DIMENSION DATA HDG.(JSE)	1996/06/30	139.36%	ECO	EDGARS CONS.STORES	2003/02/28	134.65%	GFI	GOLD FIELDS	2001/01/31	160.05%
DDT	DIMENSION DATA HDG.(JSE)	1996/07/31	126.25%	ECO	EDGARS CONS.STORES	2003/03/31	197.19%	GFI	GOLD FIELDS	2001/02/28	219.48%
DDT	DIMENSION DATA HDG.(JSE)	1996/08/31	119.72%	ECO	EDGARS CONS.STORES	2003/04/30	175.47%	GFI	GOLD FIELDS	2001/03/31	288.46%
DDT	DIMENSION DATA HDG.(JSE)	1996/09/30	116.19%	ECO	EDGARS CONS.STORES	2003/05/31	126.23%	GFI	GOLD FIELDS	2001/04/30	273.15%
DDT	DIMENSION DATA HDG.(JSE)	1997/02/28	127.51%	ECO	EDGARS CONS.STORES	2003/06/30	116.94%	GFI	GOLD FIELDS	2001/05/31	295.56%
DDT	DIMENSION DATA HDG.(JSE)	1997/03/31	123.75%	ECO	EDGARS CONS.STORES	2003/09/30	121.89%	GFI	GOLD FIELDS	2001/06/30	242.79%
DDT	DIMENSION DATA HDG.(JSE)	1997/04/30	135.40%	ECO	EDGARS CONS.STORES	2003/10/31	122.73%	GFI	GOLD FIELDS	2001/07/31	229.98%
DDT	DIMENSION DATA HDG.(JSE)	1997/05/31	132.15%	ECO	EDGARS CONS.STORES	2003/11/30	155.05%	GFI	GOLD FIELDS	2001/08/31	255.71%
DDT	DIMENSION DATA HDG.(JSE)	1997/07/31	105.93%	ECO	EDGARS CONS.STORES	2003/12/31	145.42%	GFI	GOLD FIELDS	2001/09/30	243.22%
DDT	DIMENSION DATA HDG.(JSE)	1998/02/28	136.68%	ELR	ELB GROUP	1999/02/28	103.68%	GFI	GOLD FIELDS	2001/10/31	178.66%
DDT	DIMENSION DATA HDG.(JSE)	1999/03/31	115.09%	ELH	ELLERINE	1998/11/30	140.00%	GFI	GOLD FIELDS	2001/11/30	116.81%
DDT	DIMENSION DATA HDG.(JSE)	1999/06/30	112.40%	ELH	ELLERINE	1998/12/31	163.22%	GFI	GOLD FIELDS	2001/12/31	114.46%
DDT	DIMENSION DATA HDG.(JSE)	1999/07/31	148.74%	ELH	ELLERINE	1999/01/31	136.11%	GDF	GOLD REEF CNO.RSTS.	1998/03/31	195.73%
DDT	DIMENSION DATA HDG.(JSE)	1999/08/31	172.24%	EOH	ENTER.OUTSC.	2002/09/30	111.55%	GDF	GOLD REEF CNO.RSTS.	1998/04/30	108.37%
DDT	DIMENSION DATA HDG.(JSE)	1999/09/30	183.14%	EOH	ENTER.OUTSC.	2003/04/30	108.42%	GDF	GOLD REEF CNO.RSTS.	1998/05/31	119.59%
DDT	DIMENSION DATA HDG.(JSE)	1999/10/31	120.84%	EOH	ENTER.OUTSC.	2003/05/31	129.71%	GDF	GOLD REEF CNO.RSTS.	1998/08/31	138.64%
DDT	DIMENSION DATA HDG.(JSE)	2003/03/31	125.12%	EOH	ENTER.OUTSC.	2003/06/30	106.88%	GDF	GOLD REEF CNO.RSTS.	1998/09/30	256.91%
DDT	DIMENSION DATA HDG.(JSE)	2003/04/30	150.55%	EOH	ENTER.OUTSC.	2003/11/30	130.34%	GDF	GOLD REEF CNO.RSTS.	1998/10/31	118.16%
DSY	DISCOVERY	2003/03/31	113.43%	EOH	ENTER.OUTSC.	2003/12/31	119.91%	GDF	GOLD REEF CNO.RSTS.	2002/11/30	110.01%
DSY	DISCOVERY	2003/04/30	121.46%	ENV	ENVIROSERV	1996/05/31	111.11%	GDF	GOLD REEF CNO.RSTS.	2002/12/31	129.49%
DST	DISTELL GROUP	1998/12/31	130.03%	ENV	ENVIROSERV	2000/02/29	115.43%	GDF	GOLD REEF CNO.RSTS.	2003/01/31	129.15%
DST	DISTELL GROUP	1999/01/31	154.86%	ERP	ERP.COM	2001/03/31	200.00%	GDF	GOLD REEF CNO.RSTS.	2003/02/28	171.81%
DST	DISTELL GROUP	1999/02/28	115.68%	ERP	ERP.COM	2001/05/31	122.22%	GDF	GOLD REEF CNO.RSTS.	2003/03/31	140.19%
DLV	DORBYL	1995/01/31	126.67%	ERP	ERP.COM	2001/06/30	172.22%	GDF	GOLD REEF CNO.RSTS.	2003/04/30	142.81%
DLV	DORBYL	1995/02/28	105.74%	ERP	ERP.COM	2001/07/31	122.22%	GDF	GOLD REEF CNO.RSTS.	2003/05/31	136.42%
DLV	DORBYL	1996/08/31	114.81%	ERP	ERP.COM	2001/09/30	145.00%	GDF	GOLD REEF CNO.RSTS.	2003/06/30	121.33%
DLV	DORBYL	1998/12/31	130.39%	ERP	ERP.COM	2002/07/31	120.00%	GDF	GOLD REEF CNO.RSTS.	2003/08/31	107.65%
DLV	DORBYL	1999/01/31	117.72%	ERP	ERP.COM	2002/08/31	138.72%	GDF	GOLD REEF CNO.RSTS.	2003/09/30	108.76%
DLV	DORBYL	1999/02/28	131.15%	ERP	ERP.COM	2002/10/31	177.48%	GDF	GOLD REEF CNO.RSTS.	2003/10/31	117.80%
DRD	DRD GOLD	1997/11/30	124.69%	ERP	ERP.COM	2002/11/30	115.67%	GDF	GOLD REEF CNO.RSTS.	2003/11/30	131.07%
DRD	DRD GOLD	1997/12/31	132.10%	ERP	ERP.COM	2002/12/31	153.03%	GDF	GOLD REEF CNO.RSTS.	2003/12/31	118.55%
DRD	DRD GOLD	2000/11/30	162.16%	ERP	ERP.COM	2003/01/31	187.19%	GDH	GOOD HOPE DIAMONDS	1999/07/31	100.00%
DRD	DRD GOLD	2000/12/31	181.66%	ERP	ERP.COM	2003/02/28	168.09%	GDH	GOOD HOPE DIAMONDS	2000/04/30	200.00%
DRD	DRD GOLD	2001/01/31	210.02%	ERP	ERP.COM	2003/03/31	157.14%	GDH	GOOD HOPE DIAMONDS	2000/06/30	101.64%
DRD	DRD GOLD	2001/02/28	274.37%	ERP	ERP.COM	2003/04/30	133.90%	GDH	GOOD HOPE DIAMONDS	2000/09/30	248.78%
DRD	DRD GOLD	2001/03/31	420.07%	EXL	EXCELLERATE HDG.	1999/02/28	136.59%	GDH	GOOD HOPE DIAMONDS	2000/10/31	148.78%
DRD	DRD GOLD	2001/04/30	468.06%	EXL	EXCELLERATE HDG.	1999/05/30	118.18%	GDH	GOOD HOPE DIAMONDS	2000/11/30	148.78%
DRD	DRD GOLD	2001/05/31	461.85%	EXL	EXCELLERATE HDG.	1999/07/31	116.80%	GDH	GOOD HOPE DIAMONDS	2000/12/31	148.78%
DRD	DRD GOLD	2001/06/30	364.81%	EXL	EXCELLERATE HDG.	1999/08/31	166.50%	GDH	GOOD HOPE DIAMONDS	2001/01/31	234.43%
DRD	DRD GOLD	2001/07/31	389.21%	EXL	EXCELLERATE HDG.	1999/09/30	135.69%	GDH	GOOD HOPE DIAMONDS	2001/02/28	436.07%
DRD	DRD GOLD	2001/08/31	421.39%	EXL	EXCELLERATE HDG.	1999/10/31	100.35%	GDH	GOOD HOPE DIAMONDS	2001/03/31	220.59%
DRD	DRD GOLD	2001/09/30	318.23%	EXL	EXCELLERATE HDG.	1999/11/30	151.24%	GDH	GOOD HOPE DIAMONDS	2001/05/31	265.04%
DRD	DRD GOLD	2001/10/31	153.26%	EXL	EXCELLERATE HDG.	1999/12/31	119.77%	GDH	GOOD HOPE DIAMONDS	2001/06/30	298.37%
DRD	DRD GOLD	2001/11/30	142.39%	EXL	EXCELLERATE HDG.	2003/10/31	103.69%	GDH	GOOD HOPE DIAMONDS	2001/07/31	232.52%
DAW	DS.& WHSG.NETWORK	1995/01/31	134.48%	EXL	EXCELLERATE HDG.	2003/11/30	142.25%	GDH	GOOD HOPE DIAMONDS	2001/08/31	300.98%
DAW	DS.& WHSG.NETWORK	1995/02/28	211.30%	EXL	EXCELLERATE HDG.	2003/12/31	125.97%	GDH	GOOD HOPE DIAMONDS	2001/10/31	100.49%
DAW	DS.& WHSG.NETWORK	1995/03/31	183.21%	FBR	FAMOUS BRANDS	1998/12/31	110.19%	GDH	GOOD HOPE DIAMONDS	2001/11/30	100.49%
DAW	DS.& WHSG.NETWORK	1995/04/30	146.92%	FBR	FAMOUS BRANDS	1999/01/31	103.98%	GDH	GOOD HOPE DIAMONDS	2001/12/31	100.49%
DAW	DS.& WHSG.NETWORK	1995/05/31	114.70%	FBR	FAMOUS BRANDS	1999/02/28	121.93%	GDH	GOOD HOPE DIAMONDS	2002/01/31	100.49%
DAW	DS.& WHSG.NETWORK	1997/07/31	129.87%	FBR	FAMOUS BRANDS	2003/03/31	143.11%	GDH	GOOD HOPE DIAMONDS	2002/04/30	398.78%
DAW	DS.& WHSG.NETWORK	1997/11/30	115.88%	FBR	FAMOUS BRANDS	2003/04/30	120.17%	GDH	GOOD HOPE DIAMONDS	2002/12/31	199.76%
DAW	DS.& WHSG.NETWORK	1997/12/31	141.61%	FBR	FAMOUS BRANDS	2003/05/31	140.52%	GDH	GOOD HOPE DIAMONDS	2003/01/31	199.76%
DAW	DS.& WHSG.NETWORK	1998/01/31	245.12%	FBR	FAMOUS BRANDS	2003/06/30	156.37%	GDH	GOOD HOPE DIAMONDS	2003/02/28	199.76%
DAW	DS.& WHSG.NETWORK	1998/02/28	420.79%	FBR	FAMOUS BRANDS	2003/07/31	172.20%	GDH	GOOD HOPE DIAMONDS	2003/04/30	144.74%
DAW	DS.& WHSG.NETWORK	2002/02/28	120.70%	FBR	FAMOUS BRANDS	2003/08/31	191.28%	GDH	GOOD HOPE DIAMONDS	2003/05/31	144.74%
DAW	DS.& WHSG.NETWORK	2002/03/31	111.35%	FBR	FAMOUS BRANDS	2003/09/30	267.55%	GDH	GOOD HOPE DIAMONDS	2003/06/30	144.74%
DAW	DS.& WHSG.NETWORK	2002/05/31	116.26%	FBR	FAMOUS BRANDS	2003/10/31	182.05%	GDH	GOOD HOPE DIAMONDS	2003/07/31	227.12%
DAW	DS.& WHSG.NETWORK	2002/06/30	119.05%	FBR	FAMOUS BRANDS	2003/11/30	185.98%	GDH	GOOD HOPE DIAMONDS	2003/08/31	165.69%
DAW	DS.& WHSG.NETWORK	2002/07/31	117.45%	FBR	FAMOUS BRANDS	2003/12/31	178.97%	GDH	GOOD HOPE DIAMONDS	2003/09/30	316.73%
DAW	DS.& WHSG.NETWORK	2002/08/31	187.33%	FSR	FIRSTRAND	1995/09/30	133.33%	GND	GRINDROD	1999/09/30	112.94%
DAW	DS.& WHSG.NETWORK	2002/09/30	126.21%	FSR	FIRSTRAND	1995/10/31	113.84%	GND	GRINDROD	1999/12/31	101.19%
DAW	DS.& WHSG.NETWORK	2002/10/31	160.04%	FSR	FIRSTRAND	1996/03/31	136.43%	GND	GRINDROD	2000/02/29	104.39%
DAW	DS.& WHSG.NETWORK	2002/11/30	163.77%	FSR	FIRSTRAND	1996/04/30	104.33%	GND	GRINDROD	2000/03/31	148.31%
DAW	DS.& WHSG.NETWORK	2002/12/31	211.70%	FSR	FIRSTRAND	1996/05/31	128.69%	GND	GRINDROD	2000/04/30	127.30%
DAW	DS.& WHSG.NETWORK	2003/01/31	172.16%	FSR	FIRSTRAND	1996/06/30	137.43%	GND	GRINDROD	2000/05/31	126.79%
DAW	DS.& WHSG.NETWORK	2003/02/28	155.96%	FSR	FIRSTRAND	1996/07/31	134.94%	GND	GRINDROD	2000/10/31	100.67%

Appendix A.4. Sample Extreme Winners Sorted by Company

Continued.

Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return
GND	GRINDROD	2001/02/28	125.32%	IDI	IDION TECH.	1998/10/31	264.29%	ITE	ITALTILE	1995/02/28	103.65%
GND	GRINDROD	2003/01/31	136.35%	IDI	IDION TECH.	1998/11/30	221.38%	ITE	ITALTILE	1995/03/31	116.33%
GND	GRINDROD	2003/02/28	177.35%	IDI	IDION TECH.	1998/12/31	423.78%	ITE	ITALTILE	1995/04/30	109.29%
GND	GRINDROD	2003/03/31	233.64%	IDI	IDION TECH.	1999/01/31	549.83%	ITE	ITALTILE	1995/08/31	176.07%
GND	GRINDROD	2003/04/30	245.72%	IDI	IDION TECH.	1999/02/28	466.46%	ITE	ITALTILE	1996/09/30	136.50%
GND	GRINDROD	2003/05/31	222.13%	IDI	IDION TECH.	1999/03/31	200.00%	ITE	ITALTILE	1996/10/31	125.23%
GND	GRINDROD	2003/06/30	239.74%	IDI	IDION TECH.	2001/09/30	106.83%	ITE	ITALTILE	1996/11/30	147.49%
GND	GRINDROD	2003/07/31	280.38%	IDI	IDION TECH.	2001/10/31	204.55%	ITE	ITALTILE	1996/12/31	144.42%
GND	GRINDROD	2003/08/31	214.96%	IDI	IDION TECH.	2001/11/30	114.67%	ITE	ITALTILE	1997/01/31	136.50%
GND	GRINDROD	2003/09/30	237.05%	IDI	IDION TECH.	2002/01/31	329.44%	ITE	ITALTILE	1997/02/28	107.31%
GND	GRINDROD	2003/10/31	203.46%	IDI	IDION TECH.	2002/02/28	269.44%	ITE	ITALTILE	1997/04/30	101.04%
GND	GRINDROD	2003/11/30	245.19%	IDI	IDION TECH.	2002/03/31	144.56%	ITE	ITALTILE	1999/01/31	107.73%
GND	GRINDROD	2003/12/31	246.62%	IDI	IDION TECH.	2002/07/31	111.78%	ITE	ITALTILE	1999/02/28	122.41%
GNK	GRINTEK	1995/01/31	103.97%	ILA	ILIAD AFRICA	2000/10/31	113.85%	JSC	JASCO ELTN.	1997/03/31	231.01%
GNK	GRINTEK	1997/04/30	115.62%	ILA	ILIAD AFRICA	2000/11/30	121.11%	JSC	JASCO ELTN.	1997/04/30	288.98%
GNK	GRINTEK	1997/06/30	122.30%	ILA	ILIAD AFRICA	2001/01/31	110.76%	JSC	JASCO ELTN.	1997/05/31	403.79%
GNK	GRINTEK	1997/07/31	106.85%	ILA	ILIAD AFRICA	2001/09/30	156.28%	JSC	JASCO ELTN.	1997/06/30	285.71%
GNK	GRINTEK	1997/12/31	133.59%	ILA	ILIAD AFRICA	2001/10/31	107.91%	JSC	JASCO ELTN.	1997/07/31	208.54%
GNK	GRINTEK	1998/01/31	185.21%	ILA	ILIAD AFRICA	2001/11/30	138.53%	JSC	JASCO ELTN.	1997/10/31	120.86%
GNK	GRINTEK	1998/03/31	104.82%	ILA	ILIAD AFRICA	2001/12/31	122.86%	JSC	JASCO ELTN.	1997/11/30	222.43%
GNK	GRINTEK	1998/04/30	110.22%	ILA	ILIAD AFRICA	2002/01/31	151.57%	JSC	JASCO ELTN.	1997/12/31	199.40%
GRF	GROUP FIVE	1998/11/30	132.27%	ILA	ILIAD AFRICA	2002/02/28	217.96%	JSC	JASCO ELTN.	1998/01/31	194.47%
GRF	GROUP FIVE	1998/12/31	123.83%	ILA	ILIAD AFRICA	2002/03/31	164.93%	JSC	JASCO ELTN.	1998/02/28	165.56%
GRF	GROUP FIVE	1999/01/31	175.29%	ILA	ILIAD AFRICA	2002/04/30	122.71%	JSC	JASCO ELTN.	2001/02/28	150.03%
GRF	GROUP FIVE	1999/02/28	138.97%	ILA	ILIAD AFRICA	2002/05/31	130.12%	JSC	JASCO ELTN.	2001/03/31	179.99%
GRF	GROUP FIVE	1999/03/31	103.06%	ILA	ILIAD AFRICA	2002/06/30	174.76%	JSC	JASCO ELTN.	2001/04/30	400.17%
GRF	GROUP FIVE	2000/10/31	161.70%	ILA	ILIAD AFRICA	2002/07/31	187.42%	JSC	JASCO ELTN.	2001/05/31	216.62%
GRF	GROUP FIVE	2000/11/30	169.81%	ILA	ILIAD AFRICA	2002/08/31	136.57%	JSC	JASCO ELTN.	2001/07/31	165.66%
GRF	GROUP FIVE	2000/12/31	130.47%	ILA	ILIAD AFRICA	2002/10/31	114.36%	JSC	JASCO ELTN.	2001/08/31	202.39%
GRF	GROUP FIVE	2002/01/31	103.41%	ILA	ILIAD AFRICA	2002/12/31	129.69%	JSC	JASCO ELTN.	2001/09/30	318.13%
GRF	GROUP FIVE	2003/04/30	111.52%	ILA	ILIAD AFRICA	2003/03/31	127.77%	JSC	JASCO ELTN.	2001/10/31	257.77%
GRF	GROUP FIVE	2003/06/30	121.23%	ILA	ILIAD AFRICA	2003/04/30	122.96%	JSC	JASCO ELTN.	2001/11/30	274.97%
HAR	HARMONY GOLD MNG.	1997/11/30	139.49%	ILA	ILIAD AFRICA	2003/06/30	107.02%	JSC	JASCO ELTN.	2001/12/31	265.27%
HAR	HARMONY GOLD MNG.	1997/12/31	128.50%	ILA	ILIAD AFRICA	2003/07/31	107.08%	JSC	JASCO ELTN.	2002/01/31	130.33%
HAR	HARMONY GOLD MNG.	2000/11/30	110.39%	ILA	ILIAD AFRICA	2003/09/30	100.05%	JSC	JASCO ELTN.	2002/02/28	153.86%
HAR	HARMONY GOLD MNG.	2000/12/31	130.04%	ILA	ILIAD AFRICA	2003/10/31	112.51%	JSC	JASCO ELTN.	2002/03/31	112.85%
HAR	HARMONY GOLD MNG.	2001/01/31	160.15%	ILA	ILIAD AFRICA	2003/11/30	103.91%	JCD	JCI	2002/08/31	108.25%
HAR	HARMONY GOLD MNG.	2001/02/28	217.95%	IMP	IMPALA PLATINUM	1998/01/31	109.41%	JCD	JCI	2002/10/31	103.09%
HAR	HARMONY GOLD MNG.	2001/03/31	239.58%	IMP	IMPALA PLATINUM	1998/02/28	135.30%	JDG	JD GROUP	1998/12/31	107.39%
HAR	HARMONY GOLD MNG.	2001/04/30	254.54%	IMP	IMPALA PLATINUM	1998/04/30	119.00%	JDG	JD GROUP	2002/12/31	112.41%
HAR	HARMONY GOLD MNG.	2001/05/31	284.96%	IMP	IMPALA PLATINUM	1998/05/31	185.62%	JDG	JD GROUP	2003/02/28	111.25%
HAR	HARMONY GOLD MNG.	2001/06/30	209.82%	IMP	IMPALA PLATINUM	1998/06/30	212.74%	JDG	JD GROUP	2003/03/31	117.82%
HAR	HARMONY GOLD MNG.	2001/07/31	202.34%	IMP	IMPALA PLATINUM	1998/07/31	195.90%	JNC	JOHNNIC	1998/12/31	166.45%
HAR	HARMONY GOLD MNG.	2001/08/31	285.43%	IMP	IMPALA PLATINUM	1998/08/31	232.47%	JNC	JOHNNIC	1999/01/31	182.84%
HAR	HARMONY GOLD MNG.	2001/09/30	253.83%	IMP	IMPALA PLATINUM	1998/09/30	196.91%	JNC	JOHNNIC	1999/02/28	277.47%
HAR	HARMONY GOLD MNG.	2001/10/31	155.78%	IMP	IMPALA PLATINUM	1998/10/31	261.73%	JNC	JOHNNIC	1999/03/31	164.41%
HAR	HARMONY GOLD MNG.	2001/11/30	109.39%	IMP	IMPALA PLATINUM	1998/11/30	196.96%	JNC	JOHNNIC	1999/04/30	164.68%
HVL	HIGHVELD STL.& VNM.	2003/08/31	106.88%	IMP	IMPALA PLATINUM	1998/12/31	222.73%	JNC	JOHNNIC	1999/05/31	157.19%
HVL	HIGHVELD STL.& VNM.	2003/09/30	110.01%	IMP	IMPALA PLATINUM	1999/01/31	201.14%	JNC	JOHNNIC	1999/06/30	144.03%
HVL	HIGHVELD STL.& VNM.	2003/10/31	145.51%	IMP	IMPALA PLATINUM	1999/02/28	110.72%	JNC	JOHNNIC	1999/07/31	126.24%
HVL	HIGHVELD STL.& VNM.	2003/11/30	237.16%	IMP	IMPALA PLATINUM	1999/03/31	122.14%	JNC	JOHNNIC	1999/08/31	134.87%
HVL	HIGHVELD STL.& VNM.	2003/12/31	230.56%	IMP	IMPALA PLATINUM	2000/05/31	109.59%	JNC	JOHNNIC	1999/09/30	139.51%
HCI	HOSKEN CONS.INV.	1995/01/31	240.95%	IMP	IMPALA PLATINUM	2001/03/31	125.25%	JNC	JOHNNIC	1999/10/31	106.81%
HCI	HOSKEN CONS.INV.	1995/02/28	452.87%	IPL	IMPERIAL	1995/01/31	102.93%	JNC	JOHNNIC	2002/09/30	127.32%
HCI	HOSKEN CONS.INV.	1995/03/31	601.64%	INM	INMINS	1995/07/31	129.86%	JNC	JOHNNIC	2003/03/31	111.30%
HCI	HOSKEN CONS.INV.	1995/04/30	402.30%	INM	INMINS	1995/08/31	134.89%	JCM	JOHNNIC COMMS.	1995/02/28	126.83%
HCI	HOSKEN CONS.INV.	1995/05/31	321.84%	INM	INMINS	1996/02/29	129.86%	JCM	JOHNNIC COMMS.	1995/03/31	131.69%
HCI	HOSKEN CONS.INV.	1995/06/30	246.67%	INM	INMINS	1996/03/31	233.09%	JCM	JOHNNIC COMMS.	1995/04/30	123.77%
HCI	HOSKEN CONS.INV.	1995/07/31	145.22%	INM	INMINS	1996/04/30	172.83%	JCM	JOHNNIC COMMS.	1995/05/31	108.26%
HCI	HOSKEN CONS.INV.	1995/08/31	171.97%	INM	INMINS	1996/05/31	254.02%	JCM	JOHNNIC COMMS.	1995/06/30	105.19%
HCI	HOSKEN CONS.INV.	1995/09/30	312.14%	INM	INMINS	1996/06/30	166.75%	JCM	JOHNNIC COMMS.	1995/07/31	124.96%
HCI	HOSKEN CONS.INV.	1995/10/31	389.81%	INM	INMINS	1996/07/31	156.49%	JCM	JOHNNIC COMMS.	1995/08/31	118.40%
HCI	HOSKEN CONS.INV.	1995/11/30	335.16%	INM	INMINS	1996/08/31	155.21%	JCM	JOHNNIC COMMS.	1998/12/31	189.55%
HCI	HOSKEN CONS.INV.	1995/12/31	422.83%	INM	INMINS	1996/09/30	138.05%	JCM	JOHNNIC COMMS.	1999/01/31	195.69%
HCI	HOSKEN CONS.INV.	1996/01/31	261.45%	INM	INMINS	1996/10/31	143.90%	JCM	JOHNNIC COMMS.	1999/02/28	280.74%
HCI	HOSKEN CONS.INV.	1996/02/29	136.38%	INM	INMINS	1996/11/30	246.26%	JCM	JOHNNIC COMMS.	1999/03/31	229.61%
HCI	HOSKEN CONS.INV.	1996/03/31	153.27%	INM	INMINS	1996/12/31	170.16%	JCM	JOHNNIC COMMS.	1999/04/30	167.20%
HCI	HOSKEN CONS.INV.	1996/04/30	106.18%	INM	INMINS	1997/01/31	189.58%	JCM	JOHNNIC COMMS.	1999/05/31	140.60%
HCI	HOSKEN CONS.INV.	1996/05/31	134.88%	INM	INMINS	1999/02/28	164.60%	JCM	JOHNNIC COMMS.	1999/06/30	152.71%
HCI	HOSKEN CONS.INV.	1996/07/31	111.69%	INM	INMINS	2000/12/31	102.78%	JCM	JOHNNIC COMMS.	1999/08/31	106.85%
HCI	HOSKEN CONS.INV.	1998/12/31	102.46%	INM	INMINS	2001/07/31	107.35%	JCM	JOHNNIC COMMS.	1999/09/30	139.92%
HCI	HOSKEN CONS.INV.	1999/01/31	174.20%	INM	INMINS	2001/08/31	109.07%	KGM	KAGISO MEDIA	1995/01/31	250.52%
HCI	HOSKEN CONS.INV.	1999/02/28	142.14%	INM	INMINS	2002/06/30	109.76%	KGM	KAGISO MEDIA	1995/02/28	272.46%
HCI	HOSKEN CONS.INV.	1999/03/31	110.65%	INM	INMINS	2002/10/31	137.38%	KGM	KAGISO MEDIA	1995/03/31	284.21%
HCI	HOSKEN CONS.INV.	1999/05/31	116.62%	INM	INMINS	2002/11/30	134.76%	KGM	KAGISO MEDIA	1995/04/30	297.26%
HCI	HOSKEN CONS.INV.	1999/06/30	118.51%	INM	INMINS	2002/12/31	120.91%	KGM	KAGISO MEDIA	1997/02/28	109.74%
HCI	HOSKEN CONS.INV.	1999/07/31	111.70%	INM	INMINS	2003/01/31	147.66%	KGM	KAGISO MEDIA	1997/03/31	131.43%
HCI	HOSKEN CONS.INV.	1999/08/31	120.66%	INM	INMINS	2003/02/28	199.17%	KGM	KAGISO MEDIA	1997/04/30	203.61%
HCI	HOSKEN CONS.INV.	1999/09/30	211.45%	INM	INMINS	2003/03/31	156.43%	KGM	KAGISO MEDIA	1997/05/31	177.91%
HCI	HOSKEN CONS.INV.	1999/10/31	106.48%	INM	INMINS	2003/04/30	172.12%	KGM	KAGISO MEDIA	2000/10/31	171.29%
HCI	HOSKEN CONS.INV.	2003/09/30	201.49%	INM	INMINS	2003/05/31	152.78%	KGM	KAGISO MEDIA	2000/11/30	119.61%
HCI	HOSKEN CONS.INV.	2003/10/31	414.39%	INM	INMINS	2003/06/30	106.50%	KGM	KAGISO MEDIA	2000/12/31	123.67%
HCI	HOSKEN CONS.INV.	2003/11/30	396.36%	INM	INMINS	2003/07/31	153.75%	KGM	KAGISO MEDIA	2001/01/31	115.29%
HCI	HOSKEN CONS.INV.	2003/12/31	561.87%	INM	INMINS	2003/08/31	126.62%	KGM	KAGISO MEDIA	2001/04/30	127.02%
HWN	HOWDEN AFRICA	2002/07/31	105.46%	INM	INMINS	2003/09/30	113.68%	KGM	KAGISO MEDIA	2001/07/31	103.74%
HWN	HOWDEN AFRICA	2003/01/31	102.23%	INM	INMINS	2003/12/31	100.43%	KGM	KAGISO MEDIA	2001/08/31	121.99%
HWN	HOWDEN AFRICA	2003/02/28	118.54%	INL	INVESTEC	1996/07/31	104.23%	KGM	KAGISO MEDIA	2001/09/30	122.12%
HWN	HOWDEN AFRICA	2003/05/31	110.27%	IVT	INVICTA	1995/01/31	105.44%	KGM	KAGISO MEDIA	2002/10/31	104.34%
HWN	HOWDEN AFRICA	2003/06/30	111.99%	IVT	INVICTA	1995/10/31	100.56%	KGM	KAGISO MEDIA	2002/12/31	113.51%
HWN	HOWDEN AFRICA	2003/08/31	120.75%	IVT	INVICTA	1995/11/30	118.60%	KGM	KAGISO MEDIA	2003/01/31	132.49%
HWN	HOWDEN AFRICA	2003/09/30	108.99%	IVT	INVICTA	1996/07/31	140.14%	KGM	KAGISO MEDIA	2003/02/28	146.57%
HWN	HOWDEN AFRICA	2003/10/31	137.24%	IVT	INVICTA	1996/08/31	122.93%	KGM	KAGISO MEDIA	2003/03/31	121.67%
HWN	HOWDEN AFRICA	2003/11/30	111.52%	IVT	INVICTA	1999/02/28	104.67%	KGM	KAGISO MEDIA	2003/04/30	157.02%
HDC	HUDACO	1999/01/31	120.00%	IVT	INVICTA	2001/11/30	111.51%	KGM	KAGISO MEDIA	2003/07/31	109.03%
HDC	HUDACO	1999/02/28	120.86%	IVT	INVICTA	2002/02/28	105.98%	KGM	KAGISO MEDIA	2003/08/31	115.87%
HDC	HUDACO	1999/03/31	110.01%	IVT	INVICTA	2003/11/30	106.65%	KGM	KAGISO MEDIA	2003/09/30	116.24%
IDI	IDION TECH.	1998/08/31	254.83%	IVT	INVICTA	2003/12/31	102.21%	KGM	KAGISO MEDIA	2003/11/30	132.38%
IDI	IDION TECH.	1998/09/30	224.59%	ITE	ITALTILE	1995/01/31	119.43%	KGM	KAGISO MEDIA	2003/12/31	128.46%

Appendix A.4. Sample Extreme Winners Sorted by Company

Continued.

Code	Company Name	Start Date	Total Return
KAP	KAP INTL	2002/07/31	115.38%
KAP	KAP INTL	2002/10/31	106.25%
KAP	KAP INTL	2003/12/31	212.50%
KWV	KWV BELEGGINGS BPK	1998/02/28	117.61%
LAR	LA GROUP	1995/02/28	116.72%
LAR	LA GROUP	1995/04/30	274.81%
LAR	LA GROUP	1995/05/31	299.88%
LAR	LA GROUP	1995/06/30	206.03%
LAR	LA GROUP	1995/07/31	280.04%
LAR	LA GROUP	1995/08/31	340.02%
LAR	LA GROUP	1995/09/30	380.04%
LAR	LA GROUP	1995/10/31	400.16%
LAR	LA GROUP	1995/11/30	277.72%
LAR	LA GROUP	1995/12/31	375.11%
LAR	LA GROUP	1996/01/31	304.85%
LAR	LA GROUP	1996/02/29	226.99%
LAR	LA GROUP	1996/03/31	334.66%
LAR	LA GROUP	1996/04/30	253.36%
LAR	LA GROUP	1996/05/31	221.83%
LAR	LA GROUP	1996/06/30	292.15%
LAR	LA GROUP	1996/07/31	215.78%
LAR	LA GROUP	1996/08/31	279.54%
LAR	LA GROUP	1996/09/30	177.07%
LAR	LA GROUP	1996/10/31	166.68%
LAR	LA GROUP	1997/02/28	126.84%
LAR	LA GROUP	1997/03/31	124.54%
LAR	LA GROUP	1997/04/30	168.07%
LAR	LA GROUP	1997/05/31	230.08%
LAR	LA GROUP	1997/06/30	136.80%
LAR	LA GROUP	1997/07/31	109.73%
LAR	LA GROUP	2003/06/30	102.93%
LAR	LA GROUP	2003/07/31	130.76%
LAR	LA GROUP	2003/08/31	202.41%
LAR	LA GROUP	2003/09/30	121.54%
LAR	LA GROUP	2003/10/31	126.71%
LAR	LA GROUP	2003/12/31	169.45%
LAN	LA GROUP 'N'	1997/06/30	118.71%
LAN	LA GROUP 'N'	2003/04/30	125.94%
LAN	LA GROUP 'N'	2003/05/31	167.12%
LAN	LA GROUP 'N'	2003/06/30	118.78%
LAN	LA GROUP 'N'	2003/07/31	140.12%
LAN	LA GROUP 'N'	2003/08/31	150.78%
LAN	LA GROUP 'N'	2003/09/30	126.55%
LAN	LA GROUP 'N'	2003/10/31	125.31%
LAN	LA GROUP 'N'	2003/11/30	151.79%
LAN	LA GROUP 'N'	2003/12/31	240.11%
LBH	LIBERTY	1998/12/31	104.76%
LBH	LIBERTY	1999/01/31	103.97%
LON	LONMIN (JSE)	1998/05/31	102.44%
LON	LONMIN (JSE)	1998/06/30	119.92%
LON	LONMIN (JSE)	1998/07/31	141.19%
LON	LONMIN (JSE)	1998/08/31	134.32%
LON	LONMIN (JSE)	1998/09/30	106.06%
LON	LONMIN (JSE)	1998/10/31	105.21%
LON	LONMIN (JSE)	1998/12/31	101.59%
LON	LONMIN (JSE)	1999/01/31	117.63%
LON	LONMIN (JSE)	2001/03/31	125.63%
MCU	M CUBED HOLDINGS	2003/02/28	109.45%
MDC	MEDI CLINIC	1995/01/31	180.03%
MDC	MEDI CLINIC	1995/02/28	180.03%
MDC	MEDI CLINIC	1995/03/31	167.18%
MDC	MEDI CLINIC	1995/04/30	172.64%
MDC	MEDI CLINIC	1995/06/30	189.14%
MDC	MEDI CLINIC	1995/07/31	148.89%
MDC	MEDI CLINIC	1995/08/31	156.03%
MDC	MEDI CLINIC	1995/09/30	115.13%
MDC	MEDI CLINIC	1995/10/31	109.28%
MDC	MEDI CLINIC	2000/04/30	105.37%
MRF	MERAFE RESOURCES	1997/02/28	157.95%
MRF	MERAFE RESOURCES	1997/03/31	210.64%
MRF	MERAFE RESOURCES	1997/04/30	150.94%
MRF	MERAFE RESOURCES	1997/05/31	253.94%
MRF	MERAFE RESOURCES	1997/06/30	276.14%
MRF	MERAFE RESOURCES	1997/07/31	108.93%
MRF	MERAFE RESOURCES	1997/12/31	118.27%
MRF	MERAFE RESOURCES	2001/05/31	130.50%
MRF	MERAFE RESOURCES	2001/06/30	138.80%
MRF	MERAFE RESOURCES	2001/07/31	154.15%
MRF	MERAFE RESOURCES	2001/08/31	138.74%
MRF	MERAFE RESOURCES	2001/09/30	171.81%
MRF	MERAFE RESOURCES	2001/10/31	153.42%
MTL	MERCANTILE BANK	2003/01/31	141.38%
MTL	MERCANTILE BANK	2003/03/31	106.90%
MES	MESSINA	1998/02/28	160.05%
MES	MESSINA	1998/03/31	100.08%
MES	MESSINA	1998/04/30	286.52%
MES	MESSINA	1998/05/31	304.58%
MES	MESSINA	1998/06/30	304.58%
MES	MESSINA	1998/07/31	255.54%
MES	MESSINA	1998/08/31	200.07%
MES	MESSINA	1998/09/30	181.30%
MES	MESSINA	1998/10/31	190.38%
MES	MESSINA	1998/11/30	227.67%
MES	MESSINA	1998/12/31	216.74%
MES	MESSINA	1999/01/31	162.53%
MES	MESSINA	1999/03/31	119.97%
MES	MESSINA	2000/04/30	165.25%
MES	MESSINA	2000/05/31	544.60%
MES	MESSINA	2000/06/30	487.52%
MES	MESSINA	2000/07/31	477.51%
MES	MESSINA	2000/08/31	476.96%
MES	MESSINA	2000/09/30	231.85%
MES	MESSINA	2000/10/31	204.75%
MES	MESSINA	2000/11/30	192.59%
MES	MESSINA	2000/12/31	158.99%
MES	MESSINA	2001/01/31	196.15%
MES	MESSINA	2001/02/28	128.58%
MES	MESSINA	2001/03/31	125.01%
MES	MESSINA	2001/08/31	104.44%
MES	MESSINA	2001/09/30	146.57%
MES	MESSINA	2001/10/31	134.37%
MES	MESSINA	2001/11/30	148.10%
MES	MESSINA	2001/12/31	136.11%
MES	MESSINA	2002/01/31	129.61%
MTA	METAIR INVESTMENTS	1995/01/31	150.20%
MTA	METAIR INVESTMENTS	1995/02/28	123.54%
MTA	METAIR INVESTMENTS	2000/01/31	120.00%
MTA	METAIR INVESTMENTS	2000/02/29	120.00%
MTA	METAIR INVESTMENTS	2000/03/31	170.41%
MTA	METAIR INVESTMENTS	2000/04/30	163.38%
MTA	METAIR INVESTMENTS	2000/05/31	172.99%
MTA	METAIR INVESTMENTS	2000/06/30	174.92%
MTA	METAIR INVESTMENTS	2000/07/31	199.56%
MTA	METAIR INVESTMENTS	2000/08/31	136.22%
MTA	METAIR INVESTMENTS	2000/09/30	109.06%
MTA	METAIR INVESTMENTS	2000/10/31	110.77%
MTA	METAIR INVESTMENTS	2000/11/30	100.76%
MTA	METAIR INVESTMENTS	2001/09/30	100.70%
MTA	METAIR INVESTMENTS	2001/11/30	136.32%
MTA	METAIR INVESTMENTS	2001/12/31	125.91%
MET	METROPOLITAN HDG.	1995/01/31	104.54%
MET	METROPOLITAN HDG.	1995/09/30	106.72%
MET	METROPOLITAN HDG.	1996/12/31	108.37%
MET	METROPOLITAN HDG.	1997/02/28	102.96%
MET	METROPOLITAN HDG.	1997/03/31	118.20%
MET	METROPOLITAN HDG.	1997/04/30	106.63%
MET	METROPOLITAN HDG.	1997/05/31	106.61%
MMG	MICROMEGA HDG.	1998/12/31	121.50%
MMG	MICROMEGA HDG.	1999/01/31	538.46%
MMG	MICROMEGA HDG.	1999/02/28	479.14%
MMG	MICROMEGA HDG.	1999/03/31	299.02%
MMG	MICROMEGA HDG.	1999/04/30	123.55%
MMG	MICROMEGA HDG.	1999/05/31	127.45%
MMG	MICROVEGA HDG.	1999/06/30	238.73%
MMG	MICROMEGA HDG.	1999/07/31	119.17%
MMG	MICROMEGA HDG.	2003/04/30	111.76%
MMG	MICROMEGA HDG.	2003/06/30	190.48%
MMG	MICROMEGA HDG.	2003/07/31	189.86%
MMG	MICROMEGA HDG.	2003/08/31	198.55%
MMG	MICROMEGA HDG.	2003/09/30	365.22%
MMG	MICROMEGA HDG.	2003/10/31	240.58%
MMG	MICROMEGA HDG.	2003/11/30	207.69%
MMG	MICROMEGA HDG.	2003/12/31	163.22%
MLA	MITTAL STEEL SA.	1998/09/30	113.95%
MLA	MITTAL STEEL SA.	1998/10/31	103.96%
MLA	MITTAL STEEL SA.	1998/12/31	167.36%
MLA	MITTAL STEEL SA.	1999/01/31	184.78%
MLA	MITTAL STEEL SA.	1999/02/28	103.70%
MLA	MITTAL STEEL SA.	2000/06/30	150.91%
MLA	MITTAL STEEL SA.	2000/10/31	157.41%
MLA	MITTAL STEEL SA.	2000/11/30	659.59%
MLA	MITTAL STEEL SA.	2000/12/31	801.25%
MLA	MITTAL STEEL SA.	2001/01/31	501.79%
MLA	MITTAL STEEL SA.	2001/02/28	646.92%
MLA	MITTAL STEEL SA.	2001/03/31	676.22%
MLA	MITTAL STEEL SA.	2001/04/30	743.92%
MLA	MITTAL STEEL SA.	2001/05/31	606.24%
MLA	MITTAL STEEL SA.	2001/06/30	744.54%
MLA	MITTAL STEEL SA.	2001/07/31	802.49%
MLA	MITTAL STEEL SA.	2001/08/31	760.33%
MLA	MITTAL STEEL SA.	2001/09/30	813.45%
MLA	MITTAL STEEL SA.	2001/10/31	748.55%
MLA	MITTAL STEEL SA.	2001/11/30	209.02%
MLA	MITTAL STEEL SA.	2001/12/31	117.62%
MLA	MITTAL STEEL SA.	2002/01/31	148.92%
MLA	MITTAL STEEL SA.	2003/02/28	103.21%
MLA	MITTAL STEEL SA.	2003/03/31	138.13%
MLA	MITTAL STEEL SA.	2003/04/30	142.96%
MLA	MITTAL STEEL SA.	2003/05/31	131.77%
MLA	MITTAL STEEL SA.	2003/06/30	157.90%
MLA	MITTAL STEEL SA.	2003/07/31	139.09%
MLA	MITTAL STEEL SA.	2003/08/31	142.71%
MLA	MITTAL STEEL SA.	2003/09/30	133.48%
MLA	MITTAL STEEL SA.	2003/10/31	139.36%
MLA	MITTAL STEEL SA.	2003/11/30	184.62%
MLA	MITTAL STEEL SA.	2003/12/31	131.86%
MOB	MOBILE INDUSTRIES	2000/07/31	140.05%
MOB	MOBILE INDUSTRIES	2000/11/30	103.12%
MOB	MOBILE INDUSTRIES	2000/12/31	190.41%
MOB	MOBILE INDUSTRIES	2001/01/31	122.06%
MOB	MOBILE INDUSTRIES	2001/03/31	116.57%
MOB	MOBILE INDUSTRIES	2001/04/30	134.29%
MBN	MOBILE INDUSTRIES 'N'	2000/07/31	140.68%
MBN	MOBILE INDUSTRIES 'N'	2000/11/30	103.21%
MBN	MOBILE INDUSTRIES 'N'	2000/12/31	200.00%
MBN	MOBILE INDUSTRIES 'N'	2001/01/31	125.29%
MBN	MOBILE INDUSTRIES 'N'	2001/02/28	100.53%
MBN	MOBILE INDUSTRIES 'N'	2001/03/31	103.97%
MBN	MOBILE INDUSTRIES 'N'	2001/04/30	119.21%
MBN	MOBILE INDUSTRIES 'N'	2001/05/31	110.56%
MPC	MR PRICE GROUP	1998/09/30	102.23%
MPC	MR PRICE GROUP	1998/12/31	174.53%
MPC	MR PRICE GROUP	1999/01/31	130.14%
MTN	MTN GROUP	1997/04/30	114.04%
MTN	MTN GROUP	1998/08/31	100.84%
MTN	MTN GROUP	1998/11/30	119.61%
MTN	MTN GROUP	1998/12/31	208.77%
MTN	MTN GROUP	1999/01/31	260.89%
MTN	MTN GROUP	1999/02/28	322.08%
MTN	MTN GROUP	1999/03/31	275.42%
MTN	MTN GROUP	1999/04/30	282.53%
MTN	MTN GROUP	1999/05/31	286.06%
MTN	MTN GROUP	1999/06/30	222.42%
MTN	MTN GROUP	1999/07/31	178.55%
MTN	MTN GROUP	1999/08/31	169.05%
MTN	MTN GROUP	1999/09/30	193.27%
MTN	MTN GROUP	1999/10/31	138.55%
MTN	MTN GROUP	2002/09/30	139.80%
MTN	MTN GROUP	2002/10/31	123.10%
MTN	MTN GROUP	2002/12/31	132.23%
MTN	MTN GROUP	2003/01/31	127.70%
MTN	MTN GROUP	2003/02/28	133.31%
MTN	MTN GROUP	2003/03/31	175.14%
MTN	MTN GROUP	2003/04/30	138.50%
MTN	MTN GROUP	2003/05/31	122.66%
MUR	MURRAY & ROBERTS	1999/01/31	103.12%
MUR	MURRAY & ROBERTS	1999/02/28	123.04%
MUR	MURRAY & ROBERTS	2000/05/31	100.00%
MUR	MURRAY & ROBERTS	2000/07/31	120.69%
MUR	MURRAY & ROBERTS	2000/08/31	125.22%
MUR	MURRAY & ROBERTS	2000/10/31	143.55%
MUR	MURRAY & ROBERTS	2000/11/30	150.00%
MUR	MURRAY & ROBERTS	2000/12/31	128.12%
MST	MUSTEK	2000/10/31	106.40%
MST	MUSTEK	2000/11/30	194.86%
MST	MUSTEK	2000/12/31	154.37%
MST	MUSTEK	2001/02/28	123.53%
MST	MUSTEK	2001/05/31	112.40%
MST	MUSTEK	2002/02/28	114.21%
MST	MUSTEK	2003/04/30	111.75%
MAF	MUTUAL & FEDERAL IN.	1995/02/28	105.40%
MAF	MUTUAL & FEDERAL IN.	1995/03/31	103.20%
MAF	MUTUAL & FEDERAL IN.	1995/04/30	107.05%
MVG	MVELAPHANDA GROUP	1997/04/30	132.82%
MVG	MVELAPHANDA GROUP	1997/05/31	134.04%
MVG	MVELAPHANDA GROUP	1997/06/30	120.26%
MVG	MVELAPHANDA GROUP	1997/07/31	154.08%
MVL	MVELAPHANDA RES.	1998/02/28	173.08%
MVL	MVELAPHANDA RES.	1998/03/31	149.05%
MVL	MVELAPHANDA RES.	1998/04/30	165.59%
MVL	MVELAPHANDA RES.	1998/05/31	133.61%
MVL	MVELAPHANDA RES.	1998/06/30	184.38%
MVL	MVELAPHANDA RES.	1998/07/31	139.05%
MVL	MVELAPHANDA RES.	1998/08/31	296.61%
MVL	MVELAPHANDA RES.	1998/09/30	149.87%
MVL	MVELAPHANDA RES.	1998/10/31	226.66%
MVL	MVELAPHANDA RES.	1998/11/30	265.98%
MVL	MVELAPHANDA RES.	1998/12/31	243.67%
MVL	MVELAPHANDA RES.	1999/01/31	200.96%
MVL	MVELAPHANDA RES.	1999/02/28	269.17%
MVL	MVELAPHANDA RES.	1999/03/31	249.81%
MVL	MVELAPHANDA RES.	1999/04/30	226.89%
MVL	MVELAPHANDA RES.	1999/05/31	440.69%
MVL	MVELAPHANDA RES.	1999/06/30	629.16%
MVL	MVELAPHANDA RES.	1999/07/31	866.81%
MVL	MVELAPHANDA RES.	1999/08/31	897.18%
MVL	MVELAPHANDA RES.	1999/09/30	657.36%
MVL	MVELAPHANDA RES.	1999/10/31	538.81%
MVL	MVELAPHANDA RES.	1999/11/30	446.12%
MVL	MVELAPHANDA RES.	1999/12/31	584.90%
MVL	MVELAPHANDA RES.	2000/01/31	636.06%
MVL	MVELAPHANDA RES.	2000/02/29	446.91%
MVL	MVELAPHANDA RES.	2000/03/31	428.89%
MVL	MVELAPHANDA RES.	2000/04/30	428.17%
MVL	MVELAPHANDA RES.	2000/05/31	295.67%
MVL	MVELAPHANDA RES.	2000/06/30	236.20%
MVL	MVELAPHANDA RES.	2000/07/31	102.01%
MVL	MVELAPHANDA RES.	2001/09/30	101.01%
MVL	MVELAPHANDA RES.	2001/10/31	110.18%
NPK	NAMPAK	1998/11/30	118.11%
NPK	NAMPAK	1998/12/31	113.80%
NPN	NASPERS	1998/11/30	163.67%
NPN	NASPERS	1998/12/31	153.86%
NPN	NASPERS	1999/01/31	217.64%
NPN	NASPERS	1999/02/28	278.90%
NPN	NASPERS	1999/03/31	168.14%
NPN	NASPERS	1999/04/30	120.19%
NPN	NASPERS	1999/05/31	112.61%
NPN	NASPERS	1999/06/31	115.57%
NPN	NASPERS	1999/09/30	107.11%
NPN	NASPERS	2003/03/31	129.96%
NPN	NASPERS	2003/04/30	118.21%
NTC	NETWORK HLTHCR.	2000/06/30	131.45%
NTC	NETWORK HLTHCR.	2000/07/31	137.21%

Appendix A.4. Sample Extreme Winners Sorted by Company

Continued.

Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return
NTC	NETWORK HLTHCR.	2000/08/31	162.52%	PIM	PRISM	2003/01/31	151.81%	RLO	REUNERT	1999/01/31	101.60%
NTC	NETWORK HLTHCR.	2000/09/30	132.80%	PIM	PRISM	2003/02/28	159.09%	RLO	REUNERT	1999/07/31	104.16%
NTC	NETWORK HLTHCR.	2000/10/31	199.25%	PIM	PRISM	2003/03/31	170.49%	RLO	REUNERT	1999/08/31	132.63%
NTC	NETWORK HLTHCR.	2000/11/30	214.60%	PIM	PRISM	2003/04/30	113.89%	RLO	REUNERT	1999/09/30	116.68%
NTC	NETWORK HLTHCR.	2000/12/31	214.60%	PSG	PSG GROUP	1995/01/31	172.74%	RLO	REUNERT	2000/05/31	101.57%
NTC	NETWORK HLTHCR.	2001/01/31	120.90%	PSG	PSG GROUP	1995/02/28	104.56%	RMH	RMB	1995/09/30	107.83%
NTC	NETWORK HLTHCR.	2001/02/28	128.63%	PSG	PSG GROUP	1995/03/31	218.21%	RMH	RMB	1995/10/31	101.27%
NTC	NETWORK HLTHCR.	2001/04/30	112.01%	PSG	PSG GROUP	1995/04/30	257.99%	RMH	RMB	1996/04/30	127.05%
NTC	NETWORK HLTHCR.	2001/05/31	101.39%	PSG	PSG GROUP	1995/05/31	329.57%	RMH	RMB	1996/05/31	116.48%
NCL	NEW CLICKS HDG.	1997/03/31	117.96%	PSG	PSG GROUP	1995/06/30	402.64%	RMH	RMB	1996/06/30	128.90%
NCL	NEW CLICKS HDG.	1998/08/31	101.53%	PSG	PSG GROUP	1995/07/31	271.74%	RMH	RMB	1996/07/31	132.16%
NCL	NEW CLICKS HDG.	1998/12/31	126.77%	PSG	PSG GROUP	1995/08/31	1084.80%	RMH	RMB	1996/08/31	121.86%
NHM	NORTHAM PLATINUM	1998/02/28	235.14%	PSG	PSG GROUP	1995/09/30	885.60%	RMH	RMB	1997/01/31	113.05%
NHM	NORTHAM PLATINUM	1998/03/31	125.45%	PSG	PSG GROUP	1995/10/31	1397.28%	RMH	RMB	1997/02/28	158.27%
NHM	NORTHAM PLATINUM	1998/04/30	137.31%	PSG	PSG GROUP	1995/11/30	1051.98%	SBL	SABLE	1998/12/31	160.27%
NHM	NORTHAM PLATINUM	1998/09/30	164.47%	PSG	PSG GROUP	1995/12/31	519.02%	SBL	SABLE	1999/03/31	122.31%
NHM	NORTHAM PLATINUM	1998/10/31	190.63%	PSG	PSG GROUP	1996/02/29	140.60%	SBL	SABLE	1999/05/31	114.16%
NHM	NORTHAM PLATINUM	1998/11/30	122.47%	PSG	PSG GROUP	1996/05/31	107.21%	SBL	SABLE	1999/06/30	106.84%
NHM	NORTHAM PLATINUM	1998/12/31	159.77%	PSG	PSG GROUP	1996/06/30	103.13%	SBL	SABLE	1999/07/31	114.16%
NHM	NORTHAM PLATINUM	1999/01/31	180.65%	PSG	PSG GROUP	1996/07/31	254.94%	SBL	SABLE	1999/08/31	112.02%
NHM	NORTHAM PLATINUM	1999/08/31	132.35%	PSG	PSG GROUP	1996/08/31	244.44%	SBL	SABLE	2003/10/31	100.09%
NHM	NORTHAM PLATINUM	1999/10/31	123.66%	PSG	PSG GROUP	1996/09/30	180.52%	SBL	SABLE	2003/12/31	129.52%
NHM	NORTHAM PLATINUM	1999/11/30	119.19%	PSG	PSG GROUP	1996/10/31	157.69%	SNT	SANTAM	1995/01/31	149.00%
NHM	NORTHAM PLATINUM	1999/12/31	107.96%	PSG	PSG GROUP	1996/11/30	140.01%	SNT	SANTAM	1995/02/28	186.15%
NHM	NORTHAM PLATINUM	2000/02/29	125.82%	PSG	PSG GROUP	1996/12/31	141.86%	SNT	SANTAM	1995/03/31	102.50%
NHM	NORTHAM PLATINUM	2000/04/30	163.16%	PSG	PSG GROUP	1997/01/31	137.90%	SNT	SANTAM	1995/04/30	121.25%
NHM	NORTHAM PLATINUM	2000/05/31	193.05%	PSG	PSG GROUP	1997/02/28	225.53%	SAP	SAPPI	1998/06/30	107.20%
NHM	NORTHAM PLATINUM	2000/06/30	106.41%	PSG	PSG GROUP	1997/03/31	183.33%	SAP	SAPPI	1998/07/31	108.23%
NHM	NORTHAM PLATINUM	2001/10/31	113.79%	PSG	PSG GROUP	1997/04/30	129.41%	SAP	SAPPI	1998/08/31	191.83%
NWL	NU WORLD	1995/01/31	142.79%	PSG	PSG GROUP	1997/05/31	107.06%	SAP	SAPPI	1998/09/30	224.56%
NWL	NU WORLD	1995/02/28	122.88%	PSG	PSG GROUP	2003/03/31	108.06%	SAP	SAPPI	1998/11/30	120.97%
NWL	NU WORLD	1995/03/31	151.72%	PSG	PSG GROUP	2003/11/30	115.50%	SAP	SAPPI	1998/12/31	172.22%
NWL	NU WORLD	1995/04/30	133.97%	PSG	PSG GROUP	2003/12/31	146.21%	SAP	SAPPI	1999/01/31	191.02%
NWL	NU WORLD	1997/05/31	112.48%	PPR	PUTCO PROPERTIES	1998/12/31	178.24%	SAP	SAPPI	1999/02/28	141.97%
NWL	NU WORLD	1997/06/30	105.15%	PPR	PUTCO PROPERTIES	1999/01/31	121.27%	SAP	SAPPI	2000/11/30	126.86%
NWL	NU WORLD	2003/03/31	137.03%	PPR	PUTCO PROPERTIES	1999/02/28	106.42%	SAP	SAPPI	2000/12/31	121.81%
NWL	NU WORLD	2003/04/30	167.26%	RBW	RAINBOW CHICKEN	1998/02/28	101.43%	SAP	SAPPI	2001/01/31	126.96%
NWL	NU WORLD	2003/05/31	115.88%	RBW	RAINBOW CHICKEN	1999/11/30	103.28%	SAP	SAPPI	2001/02/28	141.54%
NWL	NU WORLD	2003/07/31	104.71%	RBW	RAINBOW CHICKEN	2000/02/29	131.82%	SAP	SAPPI	2001/03/31	140.50%
OMN	OMNIA	2001/02/28	149.96%	RBW	RAINBOW CHICKEN	2000/04/30	118.84%	SAP	SAPPI	2001/06/30	109.37%
OMN	OMNIA	2001/03/31	221.32%	RBW	RAINBOW CHICKEN	2000/05/31	141.89%	SFN	SASFIN	1995/01/31	361.12%
OMN	OMNIA	2001/04/30	158.09%	RBW	RAINBOW CHICKEN	2000/06/30	148.00%	SFN	SASFIN	1995/02/28	132.57%
OMN	OMNIA	2001/05/31	125.64%	RBW	RAINBOW CHICKEN	2000/11/30	113.71%	SFN	SASFIN	1995/03/31	111.52%
OMN	OMNIA	2001/07/31	182.73%	RBW	RAINBOW CHICKEN	2002/10/31	106.49%	SFN	SASFIN	1995/04/30	122.65%
OMN	OMNIA	2001/08/31	207.46%	RNG	RANDGOLD & EXP.	1995/04/30	105.89%	SFN	SASFIN	1995/05/31	105.28%
OMN	OMNIA	2001/09/30	237.57%	RNG	RANDGOLD & EXP.	1995/05/31	157.97%	SFN	SASFIN	1995/09/30	144.87%
OMN	OMNIA	2001/10/31	241.95%	RNG	RANDGOLD & EXP.	1995/06/30	119.50%	SFN	SASFIN	1996/05/31	121.74%
OMN	OMNIA	2001/11/30	211.08%	RNG	RANDGOLD & EXP.	1995/07/31	124.26%	SFN	SASFIN	1996/06/30	161.68%
OMN	OMNIA	2001/12/31	147.48%	RNG	RANDGOLD & EXP.	1995/08/31	129.31%	SFN	SASFIN	1996/07/31	268.56%
OMN	OMNIA	2002/01/31	169.54%	RNG	RANDGOLD & EXP.	1995/09/30	131.22%	SFN	SASFIN	1996/08/31	300.94%
OMN	OMNIA	2002/02/28	134.27%	RNG	RANDGOLD & EXP.	1995/10/31	141.45%	SFN	SASFIN	1996/09/30	160.16%
OMN	OMNIA	2002/03/31	112.29%	RNG	RANDGOLD & EXP.	1995/11/30	120.33%	SFN	SASFIN	1996/10/31	154.43%
OMN	OMNIA	2002/04/30	134.97%	RNG	RANDGOLD & EXP.	1995/12/31	115.25%	SFN	SASFIN	1996/11/30	180.77%
OMN	OMNIA	2002/05/31	144.03%	RNG	RANDGOLD & EXP.	1996/01/31	139.99%	SFN	SASFIN	1996/12/31	170.93%
OMN	OMNIA	2002/06/30	123.40%	RNG	RANDGOLD & EXP.	1996/02/29	128.80%	SFN	SASFIN	1997/01/31	133.41%
OMN	OMNIA	2003/11/30	114.18%	RNG	RANDGOLD & EXP.	1996/03/31	104.41%	SFN	SASFIN	1997/02/28	134.95%
OMN	OMNIA	2003/12/31	103.93%	RNG	RANDGOLD & EXP.	1996/08/31	105.72%	SFN	SASFIN	1997/03/31	180.16%
PAM	PALABORA MINING	1998/07/31	124.82%	RNG	RANDGOLD & EXP.	1996/09/30	113.35%	SFN	SASFIN	1997/04/30	197.79%
PAM	PALABORA MINING	1998/08/31	118.70%	RNG	RANDGOLD & EXP.	1998/12/31	193.05%	SFN	SASFIN	1997/05/31	160.92%
PAM	PALABORA MINING	1998/09/30	148.68%	RNG	RANDGOLD & EXP.	2000/12/31	107.75%	SFN	SASFIN	2003/02/28	148.03%
PHM	PHUMELELA GMG.& LEIS.	2002/06/30	271.71%	RNG	RANDGOLD & EXP.	2001/01/31	202.33%	SFN	SASFIN	2003/03/31	159.84%
PHM	PHUMELELA GMG.& LEIS.	2002/07/31	293.22%	RNG	RANDGOLD & EXP.	2001/02/28	125.80%	SFN	SASFIN	2003/04/30	159.44%
PHM	PHUMELELA GMG.& LEIS.	2002/08/31	283.02%	RNG	RANDGOLD & EXP.	2001/03/31	124.19%	SFN	SASFIN	2003/05/31	161.01%
PHM	PHUMELELA GMG.& LEIS.	2002/09/30	243.59%	RNG	RANDGOLD & EXP.	2001/04/30	109.72%	SFN	SASFIN	2003/06/30	173.41%
PHM	PHUMELELA GMG.& LEIS.	2002/10/31	120.06%	RNG	RANDGOLD & EXP.	2001/05/31	183.94%	SFN	SASFIN	2003/07/31	209.46%
PHM	PHUMELELA GMG.& LEIS.	2003/01/31	104.66%	RNG	RANDGOLD & EXP.	2001/06/30	115.37%	SFN	SASFIN	2003/08/31	215.19%
PHM	PHUMELELA GMG.& LEIS.	2003/02/28	120.91%	RNG	RANDGOLD & EXP.	2001/07/31	106.66%	SFN	SASFIN	2003/09/30	189.90%
PHM	PHUMELELA GMG.& LEIS.	2003/03/31	161.30%	RNG	RANDGOLD & EXP.	2001/09/30	105.27%	SFN	SASFIN	2003/10/31	198.36%
PHM	PHUMELELA GMG.& LEIS.	2003/04/30	115.10%	RNG	RANDGOLD & EXP.	2001/11/30	121.87%	SFN	SASFIN	2003/11/30	148.94%
PHM	PHUMELELA GMG.& LEIS.	2003/05/31	137.02%	RNG	RANDGOLD & EXP.	2001/12/31	126.63%	SFN	SASFIN	2003/12/31	214.98%
PHM	PHUMELELA GMG.& LEIS.	2003/06/30	106.12%	RNG	RANDGOLD & EXP.	2002/01/31	183.09%	SOL	SASOL	1995/11/30	112.86%
PHM	PHUMELELA GMG.& LEIS.	2003/11/30	105.61%	RNG	RANDGOLD & EXP.	2002/02/28	110.72%	SOL	SASOL	1996/11/30	120.29%
PHM	PHUMELELA GMG.& LEIS.	2003/12/31	135.20%	RNG	RANDGOLD & EXP.	2002/03/31	109.36%	SOL	SASOL	1996/12/31	142.92%
PIK	PICK N PAY STORES	1998/09/30	107.38%	RNG	RANDGOLD & EXP.	2002/08/31	100.58%	SOL	SASOL	1999/01/31	142.35%
PWK	PIK N PAY	1998/12/31	104.79%	RAH	REAL AFRICA	1995/07/31	108.33%	SOL	SASOL	2000/12/31	125.43%
PPC	PRETORIA POR.CMT.	2003/12/31	119.64%	RAH	REAL AFRICA	1995/08/31	108.33%	SCN	SCHARRIG MINING	2000/03/31	112.24%
PMA	PRIMEDIA	1996/03/31	105.30%	RAH	REAL AFRICA	1995/09/30	187.50%	SCN	SCHARRIG MINING	2000/04/30	132.61%
PMA	PRIMEDIA	1996/04/30	144.68%	RAH	REAL AFRICA	1995/10/31	221.21%	SCN	SCHARRIG MINING	2000/10/31	131.97%
PMA	PRIMEDIA	1996/05/31	138.31%	RAH	REAL AFRICA	1995/11/30	163.71%	SCN	SCHARRIG MINING	2002/08/31	110.65%
PMA	PRIMEDIA	1996/06/30	107.02%	RAH	REAL AFRICA	1996/01/31	129.38%	SCN	SCHARRIG MINING	2002/09/30	110.65%
PMA	PRIMEDIA	2003/04/30	103.70%	RAH	REAL AFRICA	1996/02/29	130.73%	SCN	SCHARRIG MINING	2003/02/28	106.40%
PMA	PRIMEDIA	2003/05/31	118.96%	RAH	REAL AFRICA	1996/03/31	177.28%	SCN	SCHARRIG MINING	2003/03/31	118.21%
PMA	PRIMEDIA	2003/06/30	124.16%	RAH	REAL AFRICA	1996/04/30	200.43%	SCN	SCHARRIG MINING	2003/04/30	170.03%
PMA	PRIMEDIA	2003/07/31	118.78%	RAH	REAL AFRICA	1996/05/31	230.86%	SCN	SCHARRIG MINING	2003/05/31	145.14%
PMA	PRIMEDIA	2003/08/31	112.29%	RAH	REAL AFRICA	1996/06/30	210.34%	SCN	SCHARRIG MINING	2003/06/30	101.78%
PMA	PRIMEDIA	2003/09/30	120.37%	RAH	REAL AFRICA	1996/07/31	249.28%	SCN	SCHARRIG MINING	2003/07/31	117.11%
PMN	PRIMEDIA 'N'	2003/02/28	103.80%	RAH	REAL AFRICA	1996/08/31	260.64%	SCN	SCHARRIG MINING	2003/08/31	109.75%
PMN	PRIMEDIA 'N'	2003/03/31	126.79%	RAH	REAL AFRICA	1996/09/30	173.17%	SCN	SCHARRIG MINING	2003/10/31	122.92%
PMN	PRIMEDIA 'N'	2003/04/30	180.29%	RAH	REAL AFRICA	1996/10/31	110.96%	SCN	SCHARRIG MINING	2003/11/30	145.24%
PMN	PRIMEDIA 'N'	2003/05/31	128.81%	RAH	REAL AFRICA	1996/12/31	116.98%	SCN	SCHARRIG MINING	2003/12/31	100.28%
PMN	PRIMEDIA 'N'	2003/06/30	127.00%	RAH	REAL AFRICA	1997/01/31	110.70%	SRN	SEARDEL INV.	1999/12/31	100.73%
PMN	PRIMEDIA 'N'	2003/07/31	104.41%	RAH	REAL AFRICA	1997/02/28	119.99%	SKJ	SEKUNJALO INVS.	2002/01/31	137.62%
PMN	PRIMEDIA 'N'	2003/08/31	113.73%	RAH	REAL AFRICA	1997/03/31	161.59%	SKJ	SEKUNJALO INVS.	2002/02/28	105.21%
PMN	PRIMEDIA 'N'	2003/09/30	110.71%	RAH	REAL AFRICA	1997/04/30	160.06%	SKJ	SEKUNJALO INVS.	2002/07/31	137.62%
PIM	PRISM	2002/09/30	203.33%	RAH	REAL AFRICA	1997/05/31	183.61%	SKJ	SEKUNJALO INVS.	2002/08/31	117.92%
PIM	PRISM	2002/10/31	115.22%	RAH	REAL AFRICA	1997/06/30	131.06%	SKJ	SEKUNJALO INVS.	2002/09/30	185.42%
PIM	PRISM	2002/11/30	240.00%	RAH	REAL AFRICA	1997/07/31	132.54%	SKJ	SEKUNJALO INVS.	2002/10/31	163.21%
PIM	PRISM	2002/12/31	194.52%	RAH	REAL AFRICA	1997/09/30	103.60%	SKJ	SEKUNJALO INVS.	2002/12/31	109.64%

Appendix A.4. Sample Extreme Winners Sorted by Company

Continued.

Code	Company Name	Start Date	Total Return
SKJ	SEKUNJALO INVS.	2003/03/31	137.58%
SKJ	SEKUNJALO INVS.	2003/04/30	100.00%
STO	SETPOINT TECH.	1997/11/30	250.74%
STO	SETPOINT TECH.	1997/12/31	255.60%
STO	SETPOINT TECH.	1998/01/31	209.44%
STO	SETPOINT TECH.	2001/05/31	198.90%
STO	SETPOINT TECH.	2001/06/30	154.88%
SHP	SHOPRITE	1996/10/31	109.25%
SHP	SHOPRITE	1997/02/28	125.84%
SHP	SHOPRITE	1997/03/31	112.84%
SHP	SHOPRITE	1997/04/30	123.53%
SOV	SOVEREIGN FOOD INVS.	2000/02/29	121.43%
SOV	SOVEREIGN FOOD INVS.	2000/03/31	115.28%
SOV	SOVEREIGN FOOD INVS.	2000/04/30	103.95%
SOV	SOVEREIGN FOOD INVS.	2000/05/31	121.43%
SOV	SOVEREIGN FOOD INVS.	2000/06/30	214.29%
SOV	SOVEREIGN FOOD INVS.	2000/07/31	101.30%
SOV	SOVEREIGN FOOD INVS.	2000/08/31	288.31%
SOV	SOVEREIGN FOOD INVS.	2000/09/30	117.70%
SOV	SOVEREIGN FOOD INVS.	2000/10/31	138.68%
SOV	SOVEREIGN FOOD INVS.	2000/11/30	274.68%
SOV	SOVEREIGN FOOD INVS.	2000/12/31	117.70%
SOV	SOVEREIGN FOOD INVS.	2003/08/31	133.17%
SOV	SOVEREIGN FOOD INVS.	2003/09/30	184.74%
SOV	SOVEREIGN FOOD INVS.	2003/10/31	281.05%
SOV	SOVEREIGN FOOD INVS.	2003/11/30	271.70%
SOV	SOVEREIGN FOOD INVS.	2003/12/31	339.72%
SPS	SPESCOM	1996/05/31	155.85%
SPS	SPESCOM	1996/06/30	116.93%
SPS	SPESCOM	1996/07/31	106.96%
SPS	SPESCOM	1996/08/31	121.68%
SPS	SPESCOM	1997/07/31	129.96%
SPS	SPESCOM	2002/09/30	149.01%
SPS	SPESCOM	2002/11/30	127.07%
SPS	SPESCOM	2002/12/31	126.57%
SPS	SPESCOM	2003/01/31	206.94%
SPS	SPESCOM	2003/02/28	211.40%
SPS	SPESCOM	2003/03/31	299.91%
SPS	SPESCOM	2003/04/30	240.58%
SPS	SPESCOM	2003/05/31	112.53%
SPS	SPESCOM	2003/06/30	106.01%
SUR	SPUR	2000/04/30	115.14%
SUR	SPUR	2000/05/31	137.60%
SUR	SPUR	2000/06/30	117.38%
SUR	SPUR	2000/07/31	122.16%
SUR	SPUR	2000/08/31	103.15%
SUR	SPUR	2000/09/30	120.43%
SHF	STEINHOFF INTL.	1999/02/28	105.15%
SPG	SUPER GROUP	1995/01/31	184.60%
SPG	SUPER GROUP	1995/02/28	169.21%
SPG	SUPER GROUP	1995/03/31	153.83%
SPG	SUPER GROUP	1995/04/30	157.68%
SPG	SUPER GROUP	1995/05/31	165.38%
SPG	SUPER GROUP	1995/06/30	149.99%
SPG	SUPER GROUP	1995/07/31	273.05%
SPG	SUPER GROUP	1995/08/31	325.24%
SPG	SUPER GROUP	1995/09/30	383.60%
SPG	SUPER GROUP	1995/10/31	149.33%
SPG	SUPER GROUP	1995/11/30	147.66%
SPG	SUPER GROUP	1995/12/31	129.73%
SPG	SUPER GROUP	1996/02/29	163.26%
SPG	SUPER GROUP	1996/03/31	195.64%
SPG	SUPER GROUP	1996/04/30	156.27%
SPG	SUPER GROUP	1996/05/31	151.36%
SPG	SUPER GROUP	1996/06/30	207.43%
SPG	SUPER GROUP	1996/07/31	139.97%
SPG	SUPER GROUP	1996/08/31	127.40%
SPG	SUPER GROUP	1997/04/30	108.46%
SPG	SUPER GROUP	1997/05/31	153.22%
SPG	SUPER GROUP	2003/04/30	112.67%
SYC	SYCOM PROPERTY FUND	1998/08/31	113.60%
SYC	SYCOM PROPERTY FUND	1998/09/30	111.23%
SYC	SYCOM PROPERTY FUND	1998/10/31	106.37%
TKG	TELKOM	2003/03/31	174.08%
TKG	TELKOM	2003/04/30	143.15%
TKG	TELKOM	2003/05/31	140.43%
TKG	TELKOM	2003/06/30	111.14%
TKG	TELKOM	2003/08/31	102.24%
BSB	THE HOUSE OF BUSBY	2003/10/31	115.38%
BSB	THE HOUSE OF BUSBY	2003/11/30	108.44%
BSB	THE HOUSE OF BUSBY	2003/12/31	106.88%
TIW	TIGER WHEELS	1995/01/31	103.90%
TIW	TIGER WHEELS	1995/04/30	111.45%
TIW	TIGER WHEELS	1995/05/31	119.57%
TIW	TIGER WHEELS	1995/06/30	114.47%
TIW	TIGER WHEELS	1995/07/31	127.41%
TIW	TIGER WHEELS	1995/08/31	147.58%
TIW	TIGER WHEELS	1995/09/30	147.33%
TIW	TIGER WHEELS	1995/10/31	122.11%
TIW	TIGER WHEELS	1995/12/31	106.04%
TIW	TIGER WHEELS	2003/04/30	111.32%
TRT	TOURISM INV.	2000/06/30	127.05%
TRT	TOURISM INV.	2000/10/31	110.63%
TRT	TOURISM INV.	2000/11/30	102.17%
TRT	TOURISM INV.	2001/09/30	114.50%
TRT	TOURISM INV.	2001/10/31	161.70%
TRT	TOURISM INV.	2001/11/30	158.49%
TRT	TOURISM INV.	2001/12/31	122.38%
TRT	TOURISM INV.	2002/01/31	128.89%
TRT	TOURISM INV.	2002/02/28	131.44%
TSX	TRANS HEX GROUP	1995/10/31	118.16%
TSX	TRANS HEX GROUP	1995/11/30	159.46%
TSX	TRANS HEX GROUP	1995/12/31	182.79%
TSX	TRANS HEX GROUP	1996/01/31	100.77%
TSX	TRANS HEX GROUP	1996/02/29	162.84%
TSX	TRANS HEX GROUP	1996/03/31	224.82%
TSX	TRANS HEX GROUP	1996/04/30	162.84%
TSX	TRANS HEX GROUP	1996/05/31	145.85%
TSX	TRANS HEX GROUP	1998/08/31	123.08%
TSX	TRANS HEX GROUP	1998/12/31	136.98%
TSX	TRANS HEX GROUP	2000/05/31	163.51%
TSX	TRANS HEX GROUP	2001/09/30	119.58%
TSX	TRANS HEX GROUP	2001/10/31	139.49%
TSX	TRANS HEX GROUP	2001/11/30	103.34%
TPC	TRANSPACO	1995/01/31	449.86%
TPC	TRANSPACO	1995/02/28	546.87%
TPC	TRANSPACO	1995/03/31	693.88%
TPC	TRANSPACO	1995/04/30	582.16%
TPC	TRANSPACO	1995/05/31	376.17%
TPC	TRANSPACO	1995/06/30	471.38%
TPC	TRANSPACO	1995/07/31	471.38%
TPC	TRANSPACO	1995/08/31	203.02%
TPC	TRANSPACO	1995/09/30	144.43%
TPC	TRANSPACO	1995/10/31	139.98%
TPC	TRANSPACO	1995/11/30	214.33%
TPC	TRANSPACO	1996/09/30	100.00%
TPC	TRANSPACO	1996/10/31	108.33%
TPC	TRANSPACO	1996/11/30	218.18%
TPC	TRANSPACO	1996/12/31	181.81%
TPC	TRANSPACO	1997/01/31	168.52%
TPC	TRANSPACO	1997/02/28	249.98%
TPC	TRANSPACO	1997/03/31	339.98%
TPC	TRANSPACO	1997/04/30	294.75%
TPC	TRANSPACO	1997/05/31	219.44%
TPC	TRANSPACO	1997/06/30	186.47%
TPC	TRANSPACO	1997/07/31	119.30%
TPC	TRANSPACO	1997/08/31	111.08%
TPC	TRANSPACO	2001/08/31	114.30%
TPC	TRANSPACO	2001/09/30	210.03%
TPC	TRANSPACO	2001/10/31	263.62%
TPC	TRANSPACO	2001/11/30	210.02%
TPC	TRANSPACO	2001/12/31	280.02%
TPC	TRANSPACO	2002/01/31	190.12%
TPC	TRANSPACO	2002/02/28	136.47%
TPC	TRANSPACO	2002/03/31	252.10%
TPC	TRANSPACO	2002/04/30	252.10%
TPC	TRANSPACO	2002/05/31	292.88%
TPC	TRANSPACO	2002/06/30	228.60%
TPC	TRANSPACO	2002/07/31	237.16%
TPC	TRANSPACO	2002/08/31	106.67%
TPC	TRANSPACO	2002/09/30	103.22%
TPC	TRANSPACO	2002/11/30	125.81%
TPC	TRANSPACO	2002/12/31	121.06%
TPC	TRANSPACO	2003/02/28	108.96%
TRE	TRENCOR	2000/04/30	104.39%
TRE	TRENCOR	2000/05/31	104.48%
TRE	TRENCOR	2000/07/31	140.02%
TRE	TRENCOR	2000/09/30	104.06%
TRE	TRENCOR	2000/11/30	124.40%
TRE	TRENCOR	2000/12/31	161.57%
TRE	TRENCOR	2001/01/31	134.66%
TRE	TRENCOR	2001/02/28	114.98%
TRE	TRENCOR	2001/03/31	112.45%
TRE	TRENCOR	2001/05/31	101.10%
TRU	TRUWORTHS INTL.	1998/08/31	117.72%
TRU	TRUWORTHS INTL.	1998/09/30	150.38%
TRU	TRUWORTHS INTL.	1998/12/31	112.03%
UCS	UCS GROUP	1998/10/31	150.07%
UCS	UCS GROUP	1998/12/31	103.20%
UCS	UCS GROUP	2002/12/31	132.58%
UCS	UCS GROUP	2003/04/30	120.05%
UCS	UCS GROUP	2003/05/31	120.85%
UCS	UCS GROUP	2003/06/30	113.92%
UTR	UNITRANS	1999/01/31	110.13%
UTR	UNITRANS	1999/02/28	111.96%
VLE	VALUE GROUP	2001/09/30	100.00%
VLE	VALUE GROUP	2002/02/28	124.68%
VLE	VALUE GROUP	2002/03/31	134.73%
VLE	VALUE GROUP	2002/07/31	144.51%
VLE	VALUE GROUP	2002/08/31	182.83%
VLE	VALUE GROUP	2002/09/30	229.87%
VLE	VALUE GROUP	2002/10/31	275.00%
VLE	VALUE GROUP	2002/11/30	213.20%
VLE	VALUE GROUP	2002/12/31	132.63%
VLE	VALUE GROUP	2003/01/31	220.83%
VLE	VALUE GROUP	2003/02/28	236.13%
VLE	VALUE GROUP	2003/03/31	252.20%
VLE	VALUE GROUP	2003/04/30	365.20%
VLE	VALUE GROUP	2003/05/31	152.00%
VLE	VALUE GROUP	2003/06/30	129.91%
WES	WESCO INVESTMENTS	1998/10/31	104.02%
WES	WESCO INVESTMENTS	1998/11/30	118.22%
WES	WESCO INVESTMENTS	1998/12/31	122.18%
WES	WESCO INVESTMENTS	2000/04/30	122.71%
WES	WESCO INVESTMENTS	2000/05/31	148.69%
WES	WESCO INVESTMENTS	2000/06/30	156.93%
WES	WESCO INVESTMENTS	2000/07/31	164.25%
WES	WESCO INVESTMENTS	2000/08/31	125.60%
WES	WESCO INVESTMENTS	2000/09/30	131.20%
WES	WESCO INVESTMENTS	2000/10/31	115.58%
WES	WESCO INVESTMENTS	2000/11/30	112.84%
WES	WESCO INVESTMENTS	2000/12/31	120.17%
WBO	WILSON BAY HLM OVC	1995/01/31	183.56%
WBO	WILSON BAY HLM OVC	1995/02/28	150.73%
WBO	WILSON BAY HLM OVC	1995/03/31	168.65%
WBO	WILSON BAY HLM OVC	1995/04/30	114.84%
WBO	WILSON BAY HLM OVC	1996/07/31	103.03%
WBO	WILSON BAY HLM OVC	1996/08/31	144.26%
WBO	WILSON BAY HLM OVC	1996/10/31	123.07%
WBO	WILSON BAY HLM OVC	1996/11/30	160.87%
WBO	WILSON BAY HLM OVC	1996/12/31	127.32%
WBO	WILSON BAY HLM OVC	1998/11/30	157.98%
WBO	WILSON BAY HLM OVC	1998/12/31	200.08%
WBO	WILSON BAY HLM OVC	1999/01/31	160.48%
WBO	WILSON BAY HLM OVC	1999/02/28	208.42%
WBO	WILSON BAY HLM OVC	2000/04/30	120.42%
WBO	WILSON BAY HLM OVC	2000/05/31	177.13%
WBO	WILSON BAY HLM OVC	2000/06/30	274.25%
WBO	WILSON BAY HLM OVC	2000/07/31	245.05%
WBO	WILSON BAY HLM OVC	2000/08/31	191.99%
WBO	WILSON BAY HLM OVC	2000/09/30	218.68%
WBO	WILSON BAY HLM OVC	2000/10/31	252.23%
WBO	WILSON BAY HLM OVC	2000/11/30	233.43%
WBO	WILSON BAY HLM OVC	2000/12/31	231.96%
WBO	WILSON BAY HLM OVC	2001/01/31	214.00%
WBO	WILSON BAY HLM OVC	2001/02/28	191.34%
WBO	WILSON BAY HLM OVC	2001/03/31	184.68%
WNH	WINHOLD	1995/09/30	100.00%
WNH	WINHOLD	1996/01/31	107.14%
WNH	WINHOLD	1996/02/29	334.78%
WNH	WINHOLD	1996/03/31	380.00%
WNH	WINHOLD	1996/04/30	333.33%
WNH	WINHOLD	1996/05/31	338.46%
WNH	WINHOLD	1996/06/30	490.48%
WNH	WINHOLD	1996/07/31	271.43%
WNH	WINHOLD	1996/08/31	288.89%
WNH	WINHOLD	1996/09/30	145.00%
WNH	WINHOLD	1996/10/31	138.10%
WNH	WINHOLD	1996/11/30	101.96%
WNH	WINHOLD	2000/07/31	103.47%
WNH	WINHOLD	2001/08/31	118.14%
WNH	WINHOLD	2001/09/30	141.05%
WNH	WINHOLD	2001/10/31	118.14%
WNH	WINHOLD	2001/11/30	102.66%
WNH	WINHOLD	2001/12/31	104.59%
WNH	WINHOLD	2002/01/31	101.44%
WNH	WINHOLD	2002/03/31	106.59%
WNH	WINHOLD	2002/10/31	118.89%
WNH	WINHOLD	2002/11/30	143.47%
WNH	WINHOLD	2002/12/31	110.97%
WNH	WINHOLD	2003/02/28	129.10%
WNH	WINHOLD	2003/04/30	179.17%
WNH	WINHOLD	2003/05/31	129.66%
WNH	WINHOLD	2003/06/30	143.55%
WNH	WINHOLD	2003/07/31	160.91%
WNH	WINHOLD	2003/08/31	199.82%
WNH	WINHOLD	2003/09/30	187.51%
WNH	WINHOLD	2003/10/31	101.19%
WNH	WINHOLD	2003/12/31	120.36%

Appendix A.5. Sample Extreme Winners Sorted by Date

The table lists 12 month periods of extreme performance for all extreme winners on the JSE Securities Exchange from January 1995 until December 2004 included in this study. An extreme winner is defined as a stock which at least doubles in a 12 month period. In addition to the names of all extreme performers, the table lists the share codes for each, the start date of the 12 month period of extreme performance, as well as the return over each of these periods. The lists are sorted by date.

Start Date	Code	Company Name	Total Return
1995/01/31	ADR	ADCORP	103.97%
1995/01/31	ABL	AFRICAN BANK INVS.	1926.50%
1995/01/31	CAT	CAXTON CTP PUBLISH PRINT	113.78%
1995/01/31	CMH	COMBINED MOTOR	709.12%
1995/01/31	CNC	CONCOR	115.55%
1995/01/31	DTC	DATATEC	413.97%
1995/01/31	DDT	DIMENSION DATA HDG.(JSE)	179.44%
1995/01/31	DLV	DORBYL	126.87%
1995/01/31	DAW	DS.& WHSG.NETWORK	134.48%
1995/01/31	GNK	GRINTEK	103.97%
1995/01/31	HCI	HOSKEN CONS.INV.	240.95%
1995/01/31	IPL	IMPERIAL	102.93%
1995/01/31	IVT	INVICTA	105.44%
1995/01/31	ITE	ITALTILE	119.43%
1995/01/31	KGM	KAGISO MEDIA	250.52%
1995/01/31	MDC	MEDI CLINIC	180.03%
1995/01/31	MTA	METAIR INVESTMENTS	150.20%
1995/01/31	MET	METROPOLITAN HDG.	104.54%
1995/01/31	NWL	NU WORLD	142.79%
1995/01/31	PSG	PSG GROUP	172.74%
1995/01/31	SNT	SANTAM	149.00%
1995/01/31	SFN	SASFIN	351.12%
1995/01/31	SPG	SUPER GROUP	184.60%
1995/01/31	TIW	TIGER WHEELS	103.90%
1995/01/31	TPC	TRANSPACO	449.86%
1995/01/31	WBO	WILSON BAY HLM OVC	183.56%
1995/02/28	ADR	ADCORP	137.98%
1995/02/28	ABL	AFRICAN BANK INVS.	476.63%
1995/02/28	CAT	CAXTON CTP PUBLISH PRINT	127.82%
1995/02/28	CMH	COMBINED MOTOR	164.29%
1995/02/28	CNC	CONCOR	132.27%
1995/02/28	CNL	CONTROL INSTRUMENTS GP.	128.58%
1995/02/28	DTC	DATATEC	362.49%
1995/02/28	DDT	DIMENSION DATA HDG.(JSE)	165.06%
1995/02/28	DLV	DORBYL	105.74%
1995/02/28	DAW	DS.& WHSG.NETWORK	211.30%
1995/02/28	HCI	HOSKEN CONS.INV.	452.87%
1995/02/28	ITE	ITALTILE	103.65%
1995/02/28	JCM	JOHNNIC COMMS.	126.83%
1995/02/28	KGM	KAGISO MEDIA	272.46%
1995/02/28	LAR	LA GROUP	118.72%
1995/02/28	MDC	MEDI CLINIC	180.03%
1995/02/28	MTA	METAIR INVESTMENTS	123.54%
1995/02/28	MAF	MUTUAL & FEDERAL IN.	105.40%
1995/02/28	NWL	NU WORLD	122.88%
1995/02/28	PSG	PSG GROUP	104.56%
1995/02/28	SNT	SANTAM	186.15%
1995/02/28	SFN	SASFIN	132.57%
1995/02/28	SPG	SUPER GROUP	169.21%
1995/02/28	TPC	TRANSPACO	546.87%
1995/02/28	WBO	WILSON BAY HLM OVC	150.73%
1995/03/31	ADR	ADCORP	208.23%
1995/03/31	ABL	AFRICAN BANK INVS.	407.44%
1995/03/31	AFI	AFRICAN LIFE ASR.	111.10%
1995/03/31	BRM	BEARING MAN	214.92%
1995/03/31	BRC	BRANDCORP	101.22%
1995/03/31	BCX	BUSINESS CONNEXION GROUP	101.34%
1995/03/31	CAT	CAXTON CTP PUBLISH PRINT	119.42%
1995/03/31	CMH	COMBINED MOTOR	149.91%
1995/03/31	CNC	CONCOR	114.35%
1995/03/31	CNL	CONTROL INSTRUMENTS GP.	123.20%
1995/03/31	DTC	DATATEC	384.65%
1995/03/31	DDT	DIMENSION DATA HDG.(JSE)	145.46%
1995/03/31	DAW	DS.& WHSG.NETWORK	183.21%
1995/03/31	HCI	HOSKEN CONS.INV.	601.64%
1995/03/31	ITE	ITALTILE	118.33%
1995/03/31	JCM	JOHNNIC COMMS.	131.89%
1995/03/31	KGM	KAGISO MEDIA	284.21%
1995/03/31	MDC	MEDI CLINIC	167.18%
1995/03/31	MAF	MUTUAL & FEDERAL IN.	103.20%
1995/03/31	NWL	NU WORLD	151.72%
1995/03/31	PSG	PSG GROUP	216.21%
1995/03/31	SNT	SANTAM	102.50%
1995/03/31	SFN	SASFIN	111.52%
1995/03/31	SPG	SUPER GROUP	153.83%
1995/03/31	TPC	TRANSPACO	693.88%
1995/03/31	WBO	WILSON BAY HLM OVC	168.65%
1995/04/30	ADR	ADCORP	224.03%
1995/04/30	ABL	AFRICAN BANK INVS.	306.54%
1995/04/30	AFI	AFRICAN LIFE ASR.	119.92%
1995/04/30	BRM	BEARING MAN	243.58%
1995/04/30	BCX	BUSINESS CONNEXION GROUP	236.50%
1995/04/30	CAT	CAXTON CTP PUBLISH PRINT	101.81%
1995/04/30	CMH	COMBINED MOTOR	136.27%
1995/04/30	DTC	DATATEC	354.31%
1995/04/30	DDT	DIMENSION DATA HDG.(JSE)	149.17%
1995/04/30	DAW	DS.& WHSG.NETWORK	146.92%
1995/04/30	HCI	HOSKEN CONS.INV.	402.30%
1995/04/30	ITE	ITALTILE	109.29%
1995/04/30	JCM	JOHNNIC COMMS.	123.77%
1995/04/30	KGM	KAGISO MEDIA	297.26%
1995/04/30	LAR	LA GROUP	274.81%
1995/04/30	MDC	MEDI CLINIC	172.64%
1995/04/30	MAF	MUTUAL & FEDERAL IN.	107.05%
1995/04/30	NWL	NU WORLD	133.97%
1995/04/30	PSG	PSG GROUP	257.99%
1995/04/30	RNG	RANDGOLD & EXP.	105.89%
1995/04/30	SNT	SANTAM	121.25%
1995/04/30	SFN	SASFIN	122.65%
1995/04/30	SPG	SUPER GROUP	157.66%
1995/04/30	TIW	TIGER WHEELS	111.45%
1995/04/30	TPC	TRANSPACO	582.16%
1995/04/30	WBO	WILSON BAY HLM OVC	114.84%
1995/05/31	ADR	ADCORP	216.65%
1995/05/31	ABL	AFRICAN BANK INVS.	263.79%
1995/05/31	ANG	ANGLOGOLD ASHANTI	100.73%
1995/05/31	BRM	BEARING MAN	170.53%
1995/05/31	BCX	BUSINESS CONNEXION GROUP	232.73%
1995/05/31	DTC	DATATEC	341.20%
1995/05/31	DDT	DIMENSION DATA HDG.(JSE)	160.21%
1995/05/31	DAW	DS.& WHSG.NETWORK	114.70%
1995/05/31	HCI	HOSKEN CONS.INV.	321.84%
1995/05/31	JCM	JOHNNIC COMMS.	108.26%
1995/05/31	LAR	LA GROUP	299.86%
1995/05/31	PSG	PSG GROUP	329.57%
1995/05/31	RNG	RANDGOLD & EXP.	157.97%
1995/05/31	SFN	SASFIN	105.26%
1995/05/31	SPG	SUPER GROUP	165.38%
1995/05/31	TIW	TIGER WHEELS	119.57%
1995/05/31	TPC	TRANSPACO	376.17%
1995/06/30	ADR	ADCORP	254.37%
1995/06/30	ABL	AFRICAN BANK INVS.	308.77%
1995/06/30	BRM	BEARING MAN	230.15%
1995/06/30	BCX	BUSINESS CONNEXION GROUP	232.84%
1995/06/30	CNL	CONTROL INSTRUMENTS GP.	131.62%
1995/06/30	DTC	DATATEC	472.73%
1995/06/30	DDT	DIMENSION DATA HDG.(JSE)	200.80%
1995/06/30	HCI	HOSKEN CONS.INV.	246.67%
1995/06/30	JCM	JOHNNIC COMMS.	105.19%
1995/06/30	LAR	LA GROUP	208.03%
1995/06/30	MDC	MEDI CLINIC	189.14%
1995/06/30	PSG	PSG GROUP	402.64%
1995/06/30	RNG	RANDGOLD & EXP.	119.50%
1995/06/30	SPG	SUPER GROUP	149.99%
1995/06/30	TIW	TIGER WHEELS	114.47%
1995/06/30	TPC	TRANSPACO	471.38%
1995/07/31	ADR	ADCORP	237.49%
1995/07/31	AFL	AFLEASE GD.& UR.RES.	179.90%
1995/07/31	ABL	AFRICAN BANK INVS.	252.36%
1995/07/31	AFI	AFRICAN LIFE ASR.	117.73%
1995/07/31	BRM	BEARING MAN	228.18%
1995/07/31	BCX	BUSINESS CONNEXION GROUP	258.24%
1995/07/31	CNL	CONTROL INSTRUMENTS GP.	112.76%
1995/07/31	CPA	CORPCAPITAL	143.06%
1995/07/31	DTC	DATATEC	460.47%
1995/07/31	DDT	DIMENSION DATA HDG.(JSE)	213.72%
1995/07/31	HCI	HOSKEN CONS.INV.	145.22%
1995/07/31	INM	INMINS	129.96%
1995/07/31	JCM	JOHNNIC COMMS.	124.96%
1995/07/31	LAR	LA GROUP	280.04%
1995/07/31	MDC	MEDI CLINIC	148.89%
1995/07/31	PSG	PSG GROUP	271.74%
1995/07/31	RNG	RANDGOLD & EXP.	124.26%
1995/07/31	RAH	REAL AFRICA	108.33%
1995/07/31	SPG	SUPER GROUP	273.05%
1995/07/31	TIW	TIGER WHEELS	127.41%
1995/07/31	TPC	TRANSPACO	471.38%
1995/08/31	ADR	ADCORP	174.52%
1995/08/31	AFL	AFLEASE GD.& UR.RES.	154.58%
1995/08/31	ABL	AFRICAN BANK INVS.	210.77%
1995/08/31	AFI	AFRICAN LIFE ASR.	111.46%
1995/08/31	BRM	BEARING MAN	197.67%
1995/08/31	BCX	BUSINESS CONNEXION GROUP	298.18%
1995/08/31	CNL	CONTROL INSTRUMENTS GP.	104.11%
1995/08/31	CPA	CORPCAPITAL	122.96%
1995/08/31	DTC	DATATEC	275.24%
1995/08/31	DDT	DIMENSION DATA HDG.(JSE)	227.21%
1995/08/31	HCI	HOSKEN CONS.INV.	171.97%
1995/08/31	INM	INMINS	134.89%
1995/08/31	JCM	JOHNNIC COMMS.	118.40%
1995/08/31	LAR	LA GROUP	340.02%
1995/08/31	MDC	MEDI CLINIC	156.03%
1995/08/31	PSG	PSG GROUP	1084.80%
1995/08/31	RNG	RANDGOLD & EXP.	129.31%
1995/08/31	RAH	REAL AFRICA	106.33%
1995/08/31	SPG	SUPER GROUP	325.24%
1995/08/31	TIW	TIGER WHEELS	147.56%
1995/08/31	TPC	TRANSPACO	203.02%
1995/09/30	ADR	ADCORP	164.51%
1995/09/30	AFL	AFLEASE GD.& UR.RES.	140.04%
1995/09/30	ABL	AFRICAN BANK INVS.	175.78%
1995/09/30	AFI	AFRICAN LIFE ASR.	139.24%
1995/09/30	BRM	BEARING MAN	181.93%
1995/09/30	BCX	BUSINESS CONNEXION GROUP	305.98%
1995/09/30	CPA	CORPCAPITAL	306.42%
1995/09/30	DTC	DATATEC	259.68%
1995/09/30	DDT	DIMENSION DATA HDG.(JSE)	195.74%
1995/09/30	FSR	FIRSTRAND	133.33%
1995/09/30	HCI	HOSKEN CONS.INV.	312.14%
1995/09/30	LAR	LA GROUP	380.04%
1995/09/30	MDC	MEDI CLINIC	115.13%
1995/09/30	MET	METROPOLITAN HDG.	106.72%
1995/09/30	PSG	PSG GROUP	885.60%
1995/09/30	RNG	RANDGOLD & EXP.	131.22%
1995/09/30	RAH	REAL AFRICA	187.50%
1995/09/30	RMH	RMB	107.83%
1995/09/30	SFN	SASFIN	144.67%
1995/09/30	SPG	SUPER GROUP	383.60%
1995/09/30	TIW	TIGER WHEELS	147.33%
1995/09/30	TPC	TRANSPACO	144.43%
1995/09/30	WNH	WINHOLD	100.00%
1995/10/31	ADR	ADCORP	168.72%
1995/10/31	ABL	AFRICAN BANK INVS.	119.65%
1995/10/31	AFI	AFRICAN LIFE ASR.	101.33%
1995/10/31	BRM	BEARING MAN	213.90%
1995/10/31	BCX	BUSINESS CONNEXION GROUP	338.60%
1995/10/31	CPA	CORPCAPITAL	144.58%
1995/10/31	DTC	DATATEC	190.84%
1995/10/31	DDT	DIMENSION DATA HDG.(JSE)	174.66%
1995/10/31	FSR	FIRSTRAND	113.84%
1995/10/31	HCI	HOSKEN CONS.INV.	389.81%
1995/10/31	IVT	INVICTA	100.56%
1995/10/31	LAR	LA GROUP	400.16%
1995/10/31	MDC	MEDI CLINIC	109.28%
1995/10/31	PSG	PSG GROUP	1397.28%
1995/10/31	RNG	RANDGOLD & EXP.	141.45%
1995/10/31	RAH	REAL AFRICA	221.21%
1995/10/31	RMH	RMB	101.27%
1995/10/31	SPG	SUPER GROUP	149.33%
1995/10/31	TIW	TIGER WHEELS	122.11%
1995/10/31	TSX	TRANS HEX GROUP	118.18%
1995/10/31	TPC	TRANSPACO	139.98%
1995/11/30	ADR	ADCORP	170.01%
1995/11/30	AFL	AFLEASE GD.& UR.RES.	175.05%
1995/11/30	ABL	AFRICAN BANK INVS.	144.81%
1995/11/30	AFI	AFRICAN LIFE ASR.	106.09%
1995/11/30	BRM	BEARING MAN	259.13%
1995/11/30	BCX	BUSINESS CONNEXION GROUP	323.62%
1995/11/30	DTC	DATATEC	110.80%
1995/11/30	DDT	DIMENSION DATA HDG.(JSE)	186.19%
1995/11/30	HCI	HOSKEN CONS.INV.	335.16%
1995/11/30	IVT	INVICTA	118.60%
1995/11/30	LAR	LA GROUP	277.72%
1995/11/30	PSG	PSG GROUP	1051.98%
1995/11/30	RNG	RANDGOLD & EXP.	120.33%
1995/11/30	RAH	REAL AFRICA	163.71%
1995/11/30	SOL	SASOL	112.86%
1995/11/30	SPG	SUPER GROUP	147.66%
1995/11/30	TSX	TRANS HEX GROUP	159.48%
1995/11/30	TPC	TRANSPACO	214.33%
1995/12/31	ADR	ADCORP	251.02%
1995/12/31	AFL	AFLEASE GD.& UR.RES.	144.44%
1995/12/31	ABL	AFRICAN BANK INVS.	148.65%
1995/12/31	BRM	BEARING MAN	250.96%
1995/12/31	BCX	BUSINESS CONNEXION GROUP	378.07%
1995/12/31	DTC	DATATEC	104.33%
1995/12/31	DDT	DIMENSION DATA HDG.(JSE)	186.48%
1995/12/31	HCI	HOSKEN CONS.INV.	422.83%
1995/12/31	LAR	LA GROUP	375.11%
1995/12/31	PSG	PSG GROUP	519.02%
1995/12/31	RNG	RANDGOLD & EXP.	115.25%
1995/12/31	SPG	SUPER GROUP	129.73%
1995/12/31	TIW	TIGER WHEELS	106.04%
1995/12/31	TSX	TRANS HEX GROUP	182.79%
1996/01/31	ADR	ADCORP	301.65%
1996/01/31	AFL	AFLEASE GD.& UR.RES.	100.00%
1996/01/31	ABL	AFRICAN BANK INVS.	117.39%
1996/01/31	BRM	BEARING MAN	204.35%
1996/01/31	BCX	BUSINESS CONNEXION GROUP	320.01%
1996/01/31	DDT	DIMENSION DATA HDG.(JSE)	202.94%
1996/01/31	HCI	HOSKEN CONS.INV.	261.45%
1996/01/31	LAR	LA GROUP	304.85%
1996/01/31	RNG	RANDGOLD & EXP.	139.99%
1996/01/31	RAH	REAL AFRICA	129.38%
1996/01/31	TSX	TRANS HEX GROUP	100.77%
1996/01/31	WNH	WINHOLD	107.14%
1996/02/29	ADR	ADCORP	247.14%
1996/02/29	AFL	AFLEASE GD.& UR.RES.	100.00%
1996/02/29	ABL	AFRICAN BANK INVS.	150.00%
1996/02/29	BRM	BEARING MAN	284.71%
1996/02/29	BCX	BUSINESS CONNEXION GROUP	228.50%
1996/02/29	DTC	DATATEC	148.26%
1996/02/29	DDT	DIMENSION DATA HDG.(JSE)	136.36%
1996/02/29	HCI	HOSKEN CONS.INV.	136.36%
1996/02/29	INM	INMINS	129.88%
1996/02/29	LAR	LA GROUP	226.99%
1996/02/29	PSG	PSG GROUP	140.50%
1996/02/29	RNG	RANDGOLD & EXP.	128.80%
1996/02/29	RAH	REAL AFRICA	130.73%
1996/02/29	SPG	SUPER GROUP	163.26%
1996/02/29	TSX	TRANS HEX GROUP	162.84%
1996/02/29	WNH	WINHOLD	334.78%
1996/03/31	ADR	ADCORP	184.70%
1996/03/31	ABL	AFRICAN BANK INVS.	207.90%
1996/03/31	BCX	BUSINESS CONNEXION GROUP	193.00%
1996/03/31	CPA	CORPCAPITAL	484.38%
1996/03/31	DTC	DATATEC	121.30%
1996/03/31	DDT	DIMENSION DATA HDG.(JSE)	168.52%
1996/03/31	FSR	FIRSTRAND	136.43%
1996/03/31	HCI	HOSKEN CONS.INV.	153.27%
1996/03/31	INM	INMINS	233.09%
1996/03/31	LAR	LA GROUP	334.66%
1996/03/31	PMA	PRIMEDIA	105.30%
1996/03/31	RNG	RANDGOLD & EXP.	104.41%

Appendix A.5. Sample Extreme Winners Sorted by Date

Continued.

Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return
1996/03/31	RAH	REAL AFRICA	177.28%	1996/09/30	ABL	AFRICAN BANK INVS.	459.37%	1997/03/31	BVT	BIDVEST GROUP	103.80%
1996/03/31	SPG	SUPER GROUP	195.64%	1996/09/30	AFI	AFRICAN LIFE ASR.	140.29%	1997/03/31	BTG	BYTES TECH.GP.	791.03%
1996/03/31	TSX	TRANS HEX GROUP	224.82%	1996/09/30	ALT	ALLIED TECHNOLOGIES	118.87%	1997/03/31	CRM	CERAM C INDUSTRIES	222.92%
1996/03/31	WNH	WINHOLD	380.00%	1996/09/30	BTG	BYTES TECH.GP.	169.87%	1997/03/31	DTC	DATATEC	259.49%
1996/04/30	ADR	ADCORP	149.33%	1996/09/30	CRM	CERAMIC INDUSTRIES	241.74%	1997/03/31	DDT	DIMENSION DATA HDG.(JSE)	123.75%
1996/04/30	ABL	AFRICAN BANK INVS.	227.39%	1996/09/30	DTC	DATATEC	171.28%	1997/03/31	JSC	JASCO ELTN.	231.01%
1996/04/30	CPA	CORPCAPITAL	121.38%	1996/09/30	DDT	DIMENSION DATA HDG.(JSE)	116.19%	1997/03/31	KGM	KAGISO MEDIA	131.43%
1996/04/30	DTC	DATATEC	152.40%	1996/09/30	INM	INMINS	138.05%	1997/03/31	LAR	LA GROUP	124.54%
1996/04/30	DDT	DIMENSION DATA HDG.(JSE)	150.84%	1996/09/30	ITE	ITALTILE	136.50%	1997/03/31	MRF	MERAFE RESOURCES	210.64%
1996/04/30	FSR	FIRSTRAND	104.33%	1996/09/30	LAR	LA GROUP	177.07%	1997/03/31	MET	METROPOLITAN HDG.	118.20%
1996/04/30	HCI	HOSKEN CONS.INV.	106.18%	1996/09/30	PSG	PSG GROUP	180.52%	1997/03/31	NCL	NEW CLICKS HDG.	117.96%
1996/04/30	INM	INM.NS	172.83%	1996/09/30	RAH	REAL AFRICA	173.17%	1997/03/31	PSG	PSG GROUP	183.33%
1996/04/30	LAR	LA GROUP	253.36%	1996/09/30	SFN	SASFIN	160.16%	1997/03/31	RAH	REAL AFRICA	161.59%
1996/04/30	PMA	PRIMEDIA	144.68%	1996/09/30	TPC	TRANSPACO	100.00%	1997/03/31	SFN	SASFIN	180.16%
1996/04/30	RAH	REAL AFRICA	200.43%	1996/09/30	WNH	WINHOLD	145.00%	1997/03/31	SHP	SHOPRITE	112.84%
1996/04/30	RMH	RMB	127.05%	1996/10/31	ADR	ADCORP	191.50%	1997/03/31	TPC	TRANSPACO	339.98%
1996/04/30	SPG	SUPER GROUP	156.27%	1996/10/31	ABL	AFRICAN BANK INVS.	360.51%	1997/04/30	ADR	ADCORP	155.26%
1996/04/30	TSX	TRANS HEX GROUP	162.84%	1996/10/31	AFI	AFRICAN LIFE ASR.	134.86%	1997/04/30	ABL	AFRICAN BANK INVS.	734.53%
1996/04/30	WNH	WINHOLD	333.33%	1996/10/31	ALT	ALLIED TECHNOLOGIES	108.31%	1997/04/30	AFI	AFRICAN LIFE ASR.	142.34%
1996/05/31	ADR	ADCORP	179.95%	1996/10/31	BTG	BYTES TECH.GP.	133.16%	1997/04/30	ALT	ALLIED TECHNOLOGIES	157.86%
1996/05/31	ABL	AFRICAN BANK INVS.	269.96%	1996/10/31	CRM	CERAMIC INDUSTRIES	234.14%	1997/04/30	BRC	BRANDCORP	154.55%
1996/05/31	AFI	AFRICAN LIFE ASR.	131.05%	1996/10/31	DTC	DATATEC	140.43%	1997/04/30	BTG	BYTES TECH.GP.	1555.59%
1996/05/31	DTC	DATATEC	156.96%	1996/10/31	INM	INMINS	143.90%	1997/04/30	CRM	CERAMIC INDUSTRIES	208.28%
1996/05/31	DDT	DIMENSION DATA HDG.(JSE)	132.14%	1996/10/31	ITE	ITALTILE	125.23%	1997/04/30	DTC	DATATEC	317.48%
1996/05/31	ENV	ENVIROSERV	111.11%	1996/10/31	LAR	LA GROUP	186.68%	1997/04/30	DDT	DIMENSION DATA HDG.(JSE)	135.40%
1996/05/31	FSR	FIRSTRAND	126.69%	1996/10/31	PSG	PSG GROUP	157.69%	1997/04/30	GNK	GRINTEK	115.62%
1996/05/31	HCI	HOSKEN CONS.INV.	134.88%	1996/10/31	RAH	REAL AFRICA	110.98%	1997/04/30	ITE	ITALTILE	101.04%
1996/05/31	INM	INMINS	254.02%	1996/10/31	SFN	SASFIN	154.43%	1997/04/30	JSC	JASCO ELTN.	288.98%
1996/05/31	LAR	LA GROUP	221.83%	1996/10/31	SHP	SHOPRITE	109.25%	1997/04/30	KGM	KAGISO MEDIA	203.61%
1996/05/31	PMA	PRIMEDIA	138.31%	1996/10/31	TPC	TRANSPACO	108.33%	1997/04/30	LAR	LA GROUP	168.07%
1996/05/31	PSG	PSG GROUP	107.21%	1996/10/31	WBO	WILSON BAY HLM OVC	123.07%	1997/04/30	MRF	MERAFE RESOURCES	150.94%
1996/05/31	RAH	REAL AFRICA	230.86%	1996/10/31	WNH	WINHOLD	138.10%	1997/04/30	MET	METROPOLITAN HDG.	108.63%
1996/05/31	RMH	RMB	116.48%	1996/11/30	ADR	ADCORP	154.57%	1997/04/30	MTN	MTN GROUP	114.04%
1996/05/31	SFN	SASFIN	121.74%	1996/11/30	ABL	AFRICAN BANK INVS.	321.54%	1997/04/30	MVG	MVELAPHANDA GROUP	132.82%
1996/05/31	SPS	SPESCOM	155.85%	1996/11/30	AFI	AFRICAN LIFE ASR.	158.00%	1997/04/30	PSG	PSG GROUP	129.41%
1996/05/31	SPG	SUPER GROUP	151.36%	1996/11/30	ALT	ALLIED TECHNOLOGIES	166.76%	1997/04/30	RAH	REAL AFRICA	160.06%
1996/05/31	TSX	TRANS HEX GROUP	145.85%	1996/11/30	BTG	BYTES TECH.GP.	131.79%	1997/04/30	SFN	SASFIN	197.79%
1996/05/31	WNH	WINHOLD	338.46%	1996/11/30	CRM	CERAMIC INDUSTRIES	190.43%	1997/04/30	SHP	SHOPRITE	123.53%
1996/06/30	ADR	ADCORP	129.87%	1996/11/30	DTC	DATATEC	146.59%	1997/04/30	SPG	SUPER GROUP	108.46%
1996/06/30	AFL	AFLEASE GD & UR.RES.	102.68%	1996/11/30	INM	INMINS	246.26%	1997/04/30	TPC	TRANSPACO	294.75%
1996/06/30	ABL	AFRICAN BANK INVS.	340.60%	1996/11/30	ITE	ITALTILE	147.49%	1997/05/31	ADR	ADCORP	115.72%
1996/06/30	AFI	AFRICAN LIFE ASR.	160.65%	1996/11/30	PSG	PSG GROUP	140.01%	1997/05/31	ABL	AFRICAN BANK INVS.	658.26%
1996/06/30	DTC	DATATEC	137.18%	1996/11/30	SFN	SASFIN	180.77%	1997/05/31	AFI	AFRICAN LIFE ASR.	132.48%
1996/06/30	DDT	DIMENSION DATA HDG.(JSE)	139.36%	1996/11/30	TPC	TRANSPACO	218.18%	1997/05/31	AMA	AMALAPPC.	113.79%
1996/06/30	FSR	FIRSTRAND	137.43%	1996/11/30	WBO	WILSON BAY HLM OVC	160.87%	1997/05/31	BAT	BRAIT SA. (JSE)	141.66%
1996/06/30	INM	INMINS	166.75%	1996/11/30	WNH	WINHOLD	101.96%	1997/05/31	BCX	BUSINESS CONNEXION GROUP	117.61%
1996/06/30	LAR	LA GROUP	292.15%	1996/12/31	ABL	AFRICAN BANK INVS.	386.41%	1997/05/31	BTG	BYTES TECH.GP.	1160.94%
1996/06/30	PMA	PRIMEDIA	107.02%	1996/12/31	AFI	AFRICAN LIFE ASR.	188.72%	1997/05/31	CRM	CERAMIC INDUSTRIES	216.87%
1996/06/30	PSG	PSG GROUP	103.13%	1996/12/31	ALT	ALLIED TECHNOLOGIES	190.97%	1997/05/31	CPA	CORPCAPITAL	181.39%
1996/06/30	RAH	REAL AFRICA	210.34%	1996/12/31	BTG	BYTES TECH.GP.	127.76%	1997/05/31	DTC	DATATEC	292.38%
1996/06/30	RMH	RMB	128.90%	1996/12/31	CRM	CERAMIC INDUSTRIES	204.04%	1997/05/31	DDT	DIMENSION DATA HDG.(JSE)	132.15%
1996/06/30	SFN	SASFIN	161.68%	1996/12/31	DTC	DATATEC	157.32%	1997/05/31	JSC	JASCO ELTN.	403.79%
1996/06/30	SPS	SPESCOM	116.93%	1996/12/31	FSR	FIRSTRAND	102.64%	1997/05/31	KGM	KAGISO MEDIA	177.91%
1996/06/30	SPG	SUPER GROUP	207.43%	1996/12/31	INM	INMINS	170.16%	1997/05/31	LAR	LA GROUP	230.08%
1996/06/30	WNH	WINHOLD	490.48%	1996/12/31	ITE	ITALTILE	144.42%	1997/05/31	MRF	MERAFE RESOURCES	253.94%
1996/07/31	ADR	ADCORP	181.59%	1996/12/31	MET	METROPOLITAN HDG.	108.37%	1997/05/31	MET	METROPOLITAN HDG.	106.61%
1996/07/31	ABL	AFRICAN BANK INVS.	537.88%	1996/12/31	PSG	PSG GROUP	141.86%	1997/05/31	MVG	MVELAPHANDA GROUP	134.04%
1996/07/31	AFI	AFRICAN LIFE ASR.	171.80%	1996/12/31	RAH	REAL AFRICA	116.98%	1997/05/31	NWL	NU WORLD	112.48%
1996/07/31	ALT	ALLIED TECHNOLOGIES	101.67%	1996/12/31	SFN	SASFIN	170.93%	1997/05/31	PSG	PSG GROUP	107.06%
1996/07/31	CRM	CERAMIC INDUSTRIES	105.07%	1996/12/31	TPC	TRANSPACO	181.81%	1997/05/31	RAH	REAL AFRICA	183.61%
1996/07/31	DTC	DATATEC	148.23%	1996/12/31	WBO	WILSON BAY HLM OVC	127.32%	1997/05/31	SFN	SASFIN	160.92%
1996/07/31	DDT	DIMENSION DATA HDG.(JSE)	126.25%	1997/01/31	ABL	AFRICAN BANK INVS.	633.09%	1997/05/31	SPG	SUPER GROUP	153.22%
1996/07/31	FSR	FIRSTRAND	134.94%	1997/01/31	AFI	AFRICAN LIFE ASR.	187.82%	1997/05/31	TPC	TRANSPACO	219.44%
1996/07/31	GDH	GOOD HOPE DIAMONDS	100.00%	1997/01/31	ALT	ALLIED TECHNOLOGIES	172.85%	1997/06/30	ABL	AFRICAN BANK INVS.	474.89%
1996/07/31	HCI	HOSKEN CONS.INV.	111.69%	1997/01/31	BTG	BYTES TECH.GP.	253.80%	1997/06/30	AFI	AFRICAN LIFE ASR.	102.66%
1996/07/31	INM	INMINS	156.49%	1997/01/31	CRM	CERAMIC INDUSTRIES	207.99%	1997/06/30	APN	ASPEN PHMCR.	389.78%
1996/07/31	INL	INVESTEC	104.23%	1997/01/31	DTC	DATATEC	159.19%	1997/06/30	BAT	BRAIT SA. (JSE)	154.14%
1996/07/31	IVT	INVICTA	140.14%	1997/01/31	FSR	FIRSTRAND	133.42%	1997/06/30	BTG	BYTES TECH.GP.	517.07%
1996/07/31	LAR	LA GROUP	215.78%	1997/01/31	INM	INMINS	189.58%	1997/06/30	CRM	CERAMIC INDUSTRIES	119.64%
1996/07/31	PSG	PSG GROUP	254.94%	1997/01/31	ITE	ITALTILE	136.50%	1997/06/30	CPA	CORPCAPITAL	166.90%
1996/07/31	RAH	REAL AFRICA	249.28%	1997/01/31	PSG	PSG GROUP	137.90%	1997/06/30	DTC	DATATEC	233.98%
1996/07/31	RMH	RMB	132.16%	1997/01/31	RAH	REAL AFRICA	110.70%	1997/06/30	GNK	GRINTEK	122.30%
1996/07/31	SFN	SASFIN	268.56%	1997/01/31	RMH	RMB	113.05%	1997/06/30	JSC	JASCO ELTN.	285.71%
1996/07/31	SPS	SPESCOM	106.96%	1997/01/31	SFN	SASFIN	133.41%	1997/06/30	LAR	LA GROUP	136.80%
1996/07/31	SPG	SUPER GROUP	139.97%	1997/01/31	TPC	TRANSPACO	168.52%	1997/06/30	LAN	LA GROUP 'N'	118.71%
1996/07/31	WBO	WILSON BAY HLM OVC	103.03%	1997/02/28	ADR	ADCORP	107.43%	1997/06/30	MRF	MERAFE RESOURCES	276.14%
1996/07/31	WNH	WINHOLD	271.43%	1997/02/28	ABL	AFRICAN BANK INVS.	645.84%	1997/06/30	MVG	MVELAPHANDA GROUP	120.26%
1996/08/31	ADR	ADCORP	241.28%	1997/02/28	AFI	AFRICAN LIFE ASR.	166.64%	1997/06/30	NWL	NU WORLD	105.15%
1996/08/31	ABL	AFRICAN BANK INVS.	603.48%	1997/02/28	ALT	ALLIED TECHNOLOGIES	129.95%	1997/06/30	RAH	REAL AFRICA	131.06%
1996/08/31	AFI	AFRICAN LIFE ASR.	172.94%	1997/02/28	BTG	BYTES TECH.GP.	821.79%	1997/06/30	TPC	TRANSPACO	186.47%
1996/08/31	BTG	BYTES TECH.GP.	197.55%	1997/02/28	CRM	CERAMIC INDUSTRIES	200.94%	1997/07/31	ABL	AFRICAN BANK INVS.	334.61%
1996/08/31	CRM	CERAMIC INDUSTRIES	226.18%	1997/02/28	DTC	DATATEC	180.35%	1997/07/31	AFI	AFRICAN LIFE ASR.	114.26%
1996/08/31	DTC	DATATEC	141.66%	1997/02/28	DDT	DIMENSION DATA HDG.(JSE)	127.51%	1997/07/31	APN	ASPEN PHMCR.	608.51%
1996/08/31	DDT	DIMENSION DATA HDG.(JSE)	119.72%	1997/02/28	FSR	FIRSTRAND	133.23%	1997/07/31	BAT	BRAIT SA. (JSE)	141.66%
1996/08/31	FSR	FIRSTRAND	110.88%	1997/02/28	ITE	ITALTILE	107.31%	1997/07/31	BTG	BYTES TECH.GP.	440.29%
1996/08/31	INM	INMINS	155.21%	1997/02/28	KGM	KAGISO MEDIA	109.74%	1997/07/31	CPA	CORPCAPITAL	174.52%
1996/08/31	IVT	INVICTA	122.93%	1997/02/28	LAR	LA GROUP	126.84%	1997/07/31	DTC	DATATEC	265.82%
1996/08/31	ITE	ITALTILE	176.07%	1997/02/28	MRF	MERAFE RESOURCES	157.95%	1997/07/31	DDT	DIMENSION DATA HDG.(JSE)	105.93%
1996/08/31	LAR	LA GROUP	279.54%	1997/02/28	MET	METROPOLITAN HDG.	102.96%	1997/07/31	DAW	DS & WHSG.NETWORK	129.87%
1996/08/31	PSG	PSG GROUP	244.44%	1997/02/28	PSG	PSG GROUP	225.53%	1997/07/31	GNK	GRINTEK	106.85%
1996/08/31	RAH	REAL AFRICA	260.64%	1997/02/28	RAH	REAL AFRICA	119.99%	1997/07/31	JSC	JASCO ELTN.	208.54%
1996/08/31	RMH	RMB	121.86%	1997/02/28	RMH	RMB	158.27%	1997/07/31	LAR	LA GROUP	109.73%
1996/08/31	SFN	SASFIN	300.94%	1997/02/28	SFN	SASFIN	134.95%	1997/07/31	MRF	MERAFE RESOURCES	108.93%
1996/08/31	SPS	SPESCOM	121.68%	1997/02/28	SHP	SHOPRITE	125.84%	1997/07/31	MVG	MVELAPHANDA GROUP	154.08%
1996/08/31	SPG	SUPER GROUP	127.40%	1997/02/28	TPC	TRANSPACO	249.96%	1997/07/31	RAH	REAL AFRICA	132.54%
1996/08/31	WBO	WILSON BAY HLM OVC	144.26%	1997/03/31	ABL	AFRICAN BANK INVS.	503.59%	1997/07/31	SPS	SPESCOM	129.96%
1996/08/31	WNH	WINHOLD	288.89%	1997/03/31	AFI	AFRICAN LIFE ASR.	147.40%	1997/07/31	TPC	TRANSPACO	119.30%
1996/09/30	ADR	ADCORP	214.28%	1997/03/31	ALT	ALLIED TECHNOLOGIES	128.08%	1997/08/31	ABL	AFRICAN BANK INVS.	104.27%

Table A.5. Sample Extreme Winners Sorted by Date

Continued.

Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return
1997/08/31	APN	ASPEN PHMCR.	447.65%	1998/08/31	APN	ASPEN PHMCR.	115.21%	1998/12/31	AGL	ANGLO AMERICAN (JSE)	144.61%
1997/08/31	DTC	DATATEC	143.09%	1998/08/31	BJM	BARNARD JAC.MELLET	168.20%	1998/12/31	AMS	ANGLO AMERICAN PLAT.	141.24%
1997/08/31	TPC	TRANSPACO	111.08%	1998/08/31	BPL	BARPLATS INVS.	243.75%	1998/12/31	ART	ARGENT INDUSTRIAL	108.46%
1997/09/30	ABL	AFRICAN BANK INVS.	152.92%	1998/08/31	BEL	BELL EQUIPMENT	131.79%	1998/12/31	AVI	AVI	127.78%
1997/09/30	APN	ASPEN PHMCR.	399.94%	1998/08/31	BIL	BHP BILLITON (JSE)	147.50%	1998/12/31	BAW	BARLOWORLD	104.31%
1997/09/30	BPL	BARPLATS INVS.	147.62%	1998/08/31	CPL	CAPITAL PROPERTY FD.	108.05%	1998/12/31	BPL	BARPLATS INVS.	345.24%
1997/09/30	CLE	CLIENTELE LF.ASR.	117.30%	1998/08/31	DLV	DORBYL	114.81%	1998/12/31	BRM	BEARING MAN	113.35%
1997/09/30	FRO	FRONTRANGE SLTN.	838.43%	1998/08/31	ECO	EDGARS CONS.STORES	137.79%	1998/12/31	BIL	BHP BILLITON (JSE)	211.47%
1997/09/30	RAH	REAL AFRICA	103.60%	1998/08/31	FOS	FOSCHINI	113.82%	1998/12/31	CPL	CAPITAL PROPERTY FD.	109.21%
1997/10/31	ABL	AFRICAN BANK INVS.	276.07%	1998/08/31	GDF	GOLD REEF CNO.RSTS.	138.64%	1998/12/31	COM	COMAIR	110.92%
1997/10/31	APN	ASPEN PHMCR.	462.43%	1998/08/31	IDI	IDION TECH.	254.83%	1998/12/31	CMH	COMBINED MOTOR	113.35%
1997/10/31	BTG	BYTES TECH.GP.	197.27%	1998/08/31	IMP	IMPALA PLATINUM	232.47%	1998/12/31	DCT	DATACENTRIX	288.90%
1997/10/31	DTC	DATATEC	157.32%	1998/08/31	LON	LONMIN (JSE)	134.32%	1998/12/31	DST	DISTELL GROUP	130.03%
1997/10/31	FRO	FRONTRANGE SLTN.	730.00%	1998/08/31	MES	MESSINA	200.07%	1998/12/31	DLV	DORBYL	130.39%
1997/10/31	JSC	JASCO ELTN.	120.86%	1998/08/31	MTN	MTN GROUP	100.84%	1998/12/31	ECO	EDGARS CONS.STORES	350.53%
1997/11/30	ABL	AFRICAN BANK INVS.	182.54%	1998/08/31	MVL	MVELAPHANDA RES.	296.61%	1998/12/31	ELH	ELLERINE	163.22%
1997/11/30	APN	ASPEN PHMCR.	643.89%	1998/08/31	NCL	NEW CLICKS HDG.	101.53%	1998/12/31	FBR	FAMOUS BRANDS	110.19%
1997/11/30	BCX	BUSINESS CONNEXION GROUP	106.33%	1998/08/31	PAM	PALABORA MINING	118.70%	1998/12/31	FOS	FOSCHINI	138.52%
1997/11/30	DRD	DRD GOLD	124.69%	1998/08/31	RNG	RANDGOLD & EXP.	105.72%	1998/12/31	FRO	FRONTRANGE SLTN.	108.84%
1997/11/30	DAW	DS.& WHSG.NETWORK	115.88%	1998/08/31	SAP	SAPPI	191.83%	1998/12/31	GRF	GROUP FIVE	123.83%
1997/11/30	FRO	FRONTRANGE SLTN.	792.63%	1998/08/31	SYC	SYCOM PROPERTY FUND	113.60%	1998/12/31	HCI	HOSKEN CONS.INV.	102.46%
1997/11/30	HAR	HARMONY GOLD MNG.	139.49%	1998/08/31	TSX	TRANS HEX GROUP	123.08%	1998/12/31	IDI	IDION TECH.	423.78%
1997/11/30	JSC	JASCO ELTN.	222.43%	1998/08/31	TRU	TRUWORTHS INTL.	117.72%	1998/12/31	IMP	IMPALA PLATINUM	222.73%
1997/11/30	STO	SETPOINT TECH.	250.74%	1998/09/30	AFE	AECI	100.13%	1998/12/31	JDG	JD GROUP	107.39%
1997/12/31	AFL	AFLEASE GD.& UR.RES.	115.35%	1998/09/30	AGL	ANGLO AMERICAN (JSE)	108.31%	1998/12/31	JNC	JOHNNIC	166.45%
1997/12/31	ABL	AFRICAN BANK INVS.	163.16%	1998/09/30	ART	ARGENT INDUSTRIAL	114.66%	1998/12/31	JCM	JOHNNIC COMMS.	189.55%
1997/12/31	APN	ASPEN PHMCR.	728.70%	1998/09/30	APN	ASPEN PHMCR.	105.51%	1998/12/31	LBH	LIBERTY	104.76%
1997/12/31	BPL	BARPLATS INVS.	133.33%	1998/09/30	AVI	AVI	137.75%	1998/12/31	LON	LONMIN (JSE)	101.59%
1997/12/31	BTG	BYTES TECH.GP.	100.22%	1998/09/30	BJM	BARNARD JAC.MELLET	103.76%	1998/12/31	MES	MESSINA	216.74%
1997/12/31	DRD	DRD GOLD	132.10%	1998/09/30	BPL	BARPLATS INVS.	121.15%	1998/12/31	MMG	MICROMEGA HDG.	121.50%
1997/12/31	DAW	DS.& WHSG.NETWORK	141.61%	1998/09/30	BEL	BELL EQUIPMENT	142.78%	1998/12/31	MLA	MITTAL STEEL SA.	187.36%
1997/12/31	FRO	FRONTRANGE SLTN.	678.32%	1998/09/30	CPL	CAPITAL PROPERTY FD.	120.26%	1998/12/31	MPC	MR PRICE GROUP	174.53%
1997/12/31	GNK	GRINTEK	133.59%	1998/09/30	CLH	CITY LODGE HOTELS	120.18%	1998/12/31	MTN	MTN GROUP	208.77%
1997/12/31	HAR	HARMONY GOLD MNG.	128.50%	1998/09/30	ECO	EDGARS CONS.STORES	170.05%	1998/12/31	MVL	MVELAPHANDA RES.	243.67%
1997/12/31	JSC	JASCO ELTN.	199.40%	1998/09/30	GIJ	GIJIMA AST GROUP	105.51%	1998/12/31	NPK	NAMPAK	113.80%
1997/12/31	MRF	MERAFE RESOURCES	118.27%	1998/09/30	GDF	GOLD REEF CNO.RSTS.	256.91%	1998/12/31	NPN	NASPERS	153.86%
1997/12/31	STO	SETPOINT TECH.	255.60%	1998/09/30	IDI	IDION TECH.	224.59%	1998/12/31	NCL	NEW CLICKS HDG.	126.77%
1998/01/31	APN	ASPEN PHMCR.	1036.33%	1998/09/30	IMP	IMPALA PLATINUM	196.91%	1998/12/31	NHM	NORTHAM PLATINUM	159.77%
1998/01/31	BPL	BARPLATS INVS.	163.64%	1998/09/30	LON	LONMIN (JSE)	106.06%	1998/12/31	PWK	PIK N PAY	104.79%
1998/01/31	DAW	DS.& WHSG.NETWORK	245.12%	1998/09/30	MES	MESSINA	181.30%	1998/12/31	PPR	PUTCO PROPERTIES	178.24%
1998/01/31	FRO	FRONTRANGE SLTN.	791.70%	1998/09/30	MLA	MITTAL STEEL SA.	113.95%	1998/12/31	RNG	RANDGOLD & EXP.	193.05%
1998/01/31	GNK	GRINTEK	185.21%	1998/09/30	MPC	MR PRICE GROUP	102.23%	1998/12/31	SBL	SABLE	160.27%
1998/01/31	IMP	IMPALA PLATINUM	109.41%	1998/09/30	MVL	MVELAPHANDA RES.	149.87%	1998/12/31	SAP	SAPPI	172.22%
1998/01/31	JSC	JASCO ELTN.	194.47%	1998/09/30	NHM	NORTHAM PLATINUM	164.47%	1998/12/31	SOL	SASOL	142.92%
1998/01/31	STO	SETPOINT TECH.	209.44%	1998/09/30	PAM	PALABORA MINING	148.68%	1998/12/31	TSX	TRANS HEX GROUP	136.98%
1998/02/28	APN	ASPEN PHMCR.	1224.86%	1998/09/30	PIK	PICK N PAY STORES	107.38%	1998/12/31	TRU	TRUWORTHS INTL.	112.03%
1998/02/28	BPL	BARPLATS INVS.	306.25%	1998/09/30	RNG	RANDGOLD & EXP.	113.35%	1998/12/31	UCS	UCS GROUP	103.20%
1998/02/28	DAW	DS.& WHSG.NETWORK	420.79%	1998/09/30	SAP	SAPPI	224.56%	1998/12/31	WES	WESCO INVESTMENTS	122.18%
1998/02/28	FRO	FRONTRANGE SLTN.	188.89%	1998/09/30	SYC	SYCOM PROPERTY FUND	111.23%	1998/12/31	WBO	WILSON BAY HLM OVC	200.08%
1998/02/28	IMP	IMPALA PLATINUM	135.30%	1998/09/30	TRU	TRUWORTHS INTL.	150.38%	1999/01/31	AFE	AECI	143.54%
1998/02/28	JSC	JASCO ELTN.	165.56%	1998/10/31	ARI	AFN.RAINBOW MRLS.	110.42%	1999/01/31	ARI	AFN.RAINBOW MRLS.	135.52%
1998/02/28	MES	MESSINA	160.05%	1998/10/31	AMS	ANGLO AMERICAN PLAT.	116.79%	1999/01/31	AGL	ANGLO AMERICAN (JSE)	111.74%
1998/02/28	MVL	MVELAPHANDA RES.	173.08%	1998/10/31	AVI	AVI	187.46%	1999/01/31	AMS	ANGLO AMERICAN PLAT.	121.01%
1998/02/28	NHM	NORTHAM PLATINUM	235.14%	1998/10/31	BPL	BARPLATS INVS.	228.13%	1999/01/31	ART	ARGENT INDUSTRIAL	137.23%
1998/02/28	RBW	RAINBOW CHICKEN	101.43%	1998/10/31	BEL	BELL EQUIPMENT	140.11%	1999/01/31	AVI	AVI	158.71%
1998/03/31	APN	ASPEN PHMCR.	2199.76%	1998/10/31	BIL	BHP BILLITON (JSE)	101.79%	1999/01/31	BPL	BARPLATS INVS.	287.93%
1998/03/31	BPL	BARPLATS INVS.	238.10%	1998/10/31	CPL	CAPITAL PROPERTY FD.	124.14%	1999/01/31	BRM	BEARING MAN	134.80%
1998/03/31	FRO	FRONTRANGE SLTN.	136.48%	1998/10/31	DCT	DATACENTRIX	149.90%	1999/01/31	BIL	BHP BILLITON (JSE)	193.83%
1998/03/31	GDF	GOLD REEF CNO.RSTS.	195.73%	1998/10/31	ECO	EDGARS CONS.STORES	141.37%	1999/01/31	COM	COMAIR	165.27%
1998/03/31	GNK	GRINTEK	104.82%	1998/10/31	GDF	GOLD REEF CNO.RSTS.	118.16%	1999/01/31	DST	DISTELL GROUP	154.86%
1998/03/31	MES	MESSINA	100.08%	1998/10/31	IDI	IDION TECH.	264.29%	1999/01/31	DLV	DORBYL	117.72%
1998/03/31	MVL	MVELAPHANDA RES.	149.05%	1998/10/31	IMP	IMPALA PLATINUM	261.73%	1999/01/31	ECO	EDGARS CONS.STORES	285.55%
1998/03/31	NHM	NORTHAM PLATINUM	125.45%	1998/10/31	LON	LONMIN (JSE)	105.21%	1999/01/31	ELH	ELLERINE	136.11%
1998/04/30	APN	ASPEN PHMCR.	1103.46%	1998/10/31	MES	MESSINA	190.38%	1999/01/31	FBR	FAMOUS BRANDS	103.98%
1998/04/30	BPL	BARPLATS INVS.	266.67%	1998/10/31	MLA	MITTAL STEEL SA.	103.96%	1999/01/31	GRF	GROUP FIVE	175.29%
1998/04/30	GDF	GOLD REEF CNO.RSTS.	106.37%	1998/10/31	MVL	MVELAPHANDA RES.	226.66%	1999/01/31	HCI	HOSKEN CONS.INV.	174.20%
1998/04/30	GNK	GRINTEK	110.22%	1998/10/31	NHM	NORTHAM PLATINUM	190.63%	1999/01/31	HDC	HUDACO	120.00%
1998/04/30	IMP	IMPALA PLATINUM	119.00%	1998/10/31	SYC	SYCOM PROPERTY FUND	106.37%	1999/01/31	IDI	IDION TECH.	549.83%
1998/04/30	MES	MESSINA	286.52%	1998/10/31	UCS	UCS GROUP	150.07%	1999/01/31	IMP	IMPALA PLATINUM	201.14%
1998/04/30	MVL	MVELAPHANDA RES.	165.59%	1998/10/31	WES	WESCO INVESTMENTS	104.02%	1999/01/31	ITE	ITALTILE	107.73%
1998/04/30	NHM	NORTHAM PLATINUM	137.31%	1998/11/30	ARI	AFN.RAINBOW MRLS.	121.05%	1999/01/31	JNC	JOHNNIC	182.84%
1998/05/31	APN	ASPEN PHMCR.	722.10%	1998/11/30	AGL	ANGLO AMERICAN (JSE)	106.70%	1999/01/31	JCM	JOHNNIC COMMS.	195.69%
1998/05/31	BPL	BARPLATS INVS.	233.33%	1998/11/30	AMS	ANGLO AMERICAN PLAT.	109.34%	1999/01/31	LBH	LIBERTY	103.97%
1998/05/31	GDF	GOLD REEF CNO.RSTS.	119.59%	1998/11/30	AVI	AVI	113.05%	1999/01/31	LON	LONMIN (JSE)	117.63%
1998/05/31	IMP	IMPALA PLATINUM	185.62%	1998/11/30	BPL	BARPLATS INVS.	176.19%	1999/01/31	MES	MESSINA	162.53%
1998/05/31	LON	LONMIN (JSE)	102.44%	1998/11/30	BEL	BELL EQUIPMENT	171.49%	1999/01/31	MMG	MICROMEGA HDG.	538.46%
1998/05/31	MES	MESSINA	304.58%	1998/11/30	BIL	BHP BILLITON (JSE)	149.00%	1999/01/31	MLA	MITTAL STEEL SA.	184.78%
1998/05/31	MVL	MVELAPHANDA RES.	133.61%	1998/11/30	CPL	CAPITAL PROPERTY FD.	104.67%	1999/01/31	MPC	MR PRICE GROUP	130.14%
1998/06/30	AMS	ANGLO AMERICAN PLAT.	127.84%	1998/11/30	COM	COMAIR	126.38%	1999/01/31	MTN	MTN GROUP	260.89%
1998/06/30	APN	ASPEN PHMCR.	112.50%	1998/11/30	DCT	DATACENTRIX	119.98%	1999/01/31	MUR	MURRAY & ROBERTS	103.12%
1998/06/30	BJM	BARNARD JAC.MELLET	102.44%	1998/11/30	ECO	EDGARS CONS.STORES	234.29%	1999/01/31	MVL	MVELAPHANDA RES.	200.96%
1998/06/30	BPL	BARPLATS INVS.	423.81%	1998/11/30	ELH	ELLERINE	140.00%	1999/01/31	NPN	NASPERS	217.64%
1998/06/30	IMP	IMPALA PLATINUM	212.74%	1998/11/30	GRF	GROUP FIVE	132.27%	1999/01/31	NHM	NORTHAM PLATINUM	180.65%
1998/06/30	LON	LONMIN (JSE)	119.92%	1998/11/30	IDI	IDION TECH.	221.38%	1999/01/31	PPR	PUTCO PROPERTIES	121.27%
1998/06/30	MES	MESSINA	304.58%	1998/11/30	IMP	IMPALA PLATINUM	198.96%	1999/01/31	RLO	REUNERT	101.60%
1998/06/30	MVL	MVELAPHANDA RES.	184.38%	1998/11/30	MES	MESSINA	227.67%	1999/01/31	SAP	SAPPI	191.02%
1998/06/30	SAP	SAPPI	107.20%	1998/11/30	MTN	MTN GROUP	119.61%	1999/01/31	SOL	SASOL	142.35%
1998/07/31	BJM	BARNARD JAC.MELLET	113.75%	1998/11/30	MVL	MVELAPHANDA RES.	265.98%	1999/01/31	UTR	UNITRANS	110.13%
1998/07/31	BPL	BARPLATS INVS.	361.90%	1998/11/30	NPK	NAMPAK	118.11%	1999/01/31	WBO	WILSON BAY HLM OVC	160.48%
1998/07/31	BEL	BELL EQUIPMENT	126.01%	1998/11/30	NPN	NASPERS	163.67%	1999/02/28	AFE	AECI	129.48%
1998/07/31	IMP	IMPALA PLATINUM	195.90%	1998/11/30	NHM	NORTHAM PLATINUM	122.47%	1999/02/28	AFL	AFLEASE GD.& UR.RES.	130.02%
1998/07/31	LON	LONMIN (JSE)	141.19%	1998/11/30	SAP	SAPPI	120.97%	1999/02/28	ARI	AFN.RAINBOW MRLS.	100.01%
1998/07/31	MES	MESSINA	255.54%	1998/11/30	SOL	SASOL	120.29%	1999/02/28	ART	ARGENT INDUSTRIAL	145.38%
1998/07/31	MVL	MVELAPHANDA RES.	139.05%	1998/11/30	WES	WESCO INVESTMENTS	118.22%	1999/02/28	AVI	AVI	122.14%
1998/07/31	PAM	PALABORA MINING	124.82%	1998/11/30	WBO	WILSON BAY HLM OVC	157.98%	1999/02/28	BPL	BARPLATS INVS.	181.54%
1998/07/31	SAP	SAPPI	108.23%	1998/12/31	AFE	AECI	103.76%	1999/02/28	BEL	BELL EQUIPMENT	126.93%
1998/08/31	ARI	AFN.RAINBOW MRLS.	115.06%	1998/12/31	ARI	AFN.RAINBOW MRLS.	202.75%	1999/02/28	BIL	BHP BILLITON (JSE)	115.01%
1998/08/31	AGL	ANGLO AMERICAN (JSE)	113.35%	1998/12/31	AFB	ALEXANDER FORBES	100.08%	1999/02/28	CSB	CASHBUILD	106.95%

Appendix A.5. Sample Extreme Winners Sorted by Date

Continued.

Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return
1999/02/28	COM	COMAIR	143.68%	1999/08/31	DDT	DIMENSION DATA HDG.(JSE)	172.24%	2000/06/30	MES	MESSINA	487.52%
1999/02/28	DDT	DIMENSION DATA HDG.(JSE)	136.68%	1999/08/31	EXL	EXCELLERATE HDG.	166.50%	2000/06/30	MTA	METAIR INVESTMENTS	174.92%
1999/02/28	DST	DISTELL GROUP	115.68%	1999/08/31	HCI	HOSKEN CONS.INV.	120.66%	2000/06/30	MLA	MITTAL STEEL SA.	150.91%
1999/02/28	DLV	DORBYL	131.15%	1999/08/31	JNC	JOHNNIC	134.87%	2000/06/30	MVL	MVELAPHANDA RES.	236.20%
1999/02/28	ECO	EDGARS CONS.STORES	150.50%	1999/08/31	JCM	JOHNNIC COMMS.	106.85%	2000/06/30	NTC	NETWORK HLTHCR.	131.45%
1999/02/28	ELR	ELB GROUP	103.68%	1999/08/31	MTN	MTN GROUP	169.05%	2000/06/30	NHM	NORTHAM PLATINUM	106.41%
1999/02/28	EXL	EXCELLERATE HDG.	136.59%	1999/08/31	MVL	MVELAPHANDA RES.	897.18%	2000/06/30	RBW	RAINBOW CHICKEN	148.00%
1999/02/28	FBR	FAMOUS BRANDS	121.93%	1999/08/31	NPN	NASPERS	115.57%	2000/06/30	SOV	SOVEREIGN FOOD INVS.	214.29%
1999/02/28	GRF	GROUP FIVE	138.97%	1999/08/31	NHM	NORTHAM PLATINUM	132.35%	2000/06/30	SUR	SPUR	117.38%
1999/02/28	HCI	HOSKEN CONS.INV.	142.14%	1999/08/31	RLO	REUNERT	132.63%	2000/06/30	TRT	TOURISM INV.	127.05%
1999/02/28	HDC	HUDACO	120.86%	1999/08/31	SBL	SABLE	112.02%	2000/06/30	WES	WESCO INVESTMENTS	156.93%
1999/02/28	IDI	IDION TECH.	466.46%	1999/09/30	BEL	BELL EQUIPMENT	306.18%	2000/06/30	WBO	WILSON BAY HLM OVC	274.25%
1999/02/28	IMP	IMPALA PLATINUM	110.72%	1999/09/30	DDT	DIMENSION DATA HDG.(JSE)	183.14%	2000/07/31	AFR	AFGRI	264.59%
1999/02/28	INM	INVIRONS	164.60%	1999/09/30	EXL	EXCELLERATE HDG.	135.69%	2000/07/31	MES	MESSINA	477.51%
1999/02/28	IVT	INVICTA	104.67%	1999/09/30	GND	GRINDROD	112.94%	2000/07/31	MTA	METAIR INVESTMENTS	199.56%
1999/02/28	ITE	ITALTILE	122.41%	1999/09/30	HCI	HOSKEN CONS.INV.	211.45%	2000/07/31	MOB	MOBILE INDUSTRIES	140.05%
1999/02/28	JNC	JOHNNIC	277.47%	1999/09/30	JNC	JOHNNIC	139.51%	2000/07/31	MBN	MOBILE INDUSTRIES 'N'	140.68%
1999/02/28	JCM	JOHNNIC COMMS.	280.74%	1999/09/30	JCM	JOHNNIC COMMS.	139.92%	2000/07/31	MUR	MURRAY & ROBERTS	120.69%
1999/02/28	KWV	KWV BELEGGINGS BPK.	117.61%	1999/09/30	MTN	MTN GROUP	193.27%	2000/07/31	MVL	MVELAPHANDA RES.	102.01%
1999/02/28	MMG	M CROMEGA HDG.	479.14%	1999/09/30	MVL	MVELAPHANDA RES.	657.36%	2000/07/31	NTC	NETWORK HLTHCR.	137.21%
1999/02/28	MLA	MITTAL STEEL SA.	103.70%	1999/09/30	NPN	NASPERS	107.11%	2000/07/31	SOV	SOVEREIGN FOOD INVS.	101.30%
1999/02/28	MTN	MTN GROUP	322.08%	1999/09/30	RLO	REUNERT	116.69%	2000/07/31	SUR	SPUR	122.16%
1999/02/28	MUR	MURRAY & ROBERTS	123.04%	1999/10/31	ALT	ALLIED TECHNOLOGIES	105.87%	2000/07/31	TRE	TRENCOR	140.02%
1999/02/28	MVL	MVELAPHANDA RES.	269.17%	1999/10/31	BPL	BARPLATS INVS.	120.95%	2000/07/31	WES	WESCO INVESTMENTS	184.25%
1999/02/28	NPN	NASPERS	278.90%	1999/10/31	BEL	BELL EQUIPMENT	236.84%	2000/07/31	WBO	WILSON BAY HLM OVC	245.05%
1999/02/28	PPR	PUTCO PROPERTIES	106.42%	1999/10/31	CCT	CONNECTION GP.	101.15%	2000/07/31	WNH	WINHOLD	103.47%
1999/02/28	SAP	SAPPI	141.97%	1999/10/31	DDT	DIMENSION DATA HDG.(JSE)	120.84%	2000/08/31	AFR	AFGRI	295.28%
1999/02/28	SHF	STEINHOFF INTL.	105.15%	1999/10/31	EXL	EXCELLERATE HDG.	100.35%	2000/08/31	ART	ARGENT INDUSTRIAL	102.59%
1999/02/28	UTR	UNITRANS	111.96%	1999/10/31	HCI	HOSKEN CONS.INV.	106.48%	2000/08/31	APK	ASTRAPAK	109.75%
1999/02/28	WBO	WILSON BAY HLM OVC	208.42%	1999/10/31	JNC	JOHNNIC	106.81%	2000/08/31	MES	MESSINA	476.96%
1999/03/31	AFE	AECI	101.76%	1999/10/31	MTN	MTN GROUP	138.55%	2000/08/31	MTA	METAIR INVESTMENTS	136.22%
1999/03/31	ART	ARGENT INDUSTRIAL	100.00%	1999/10/31	MVL	MVELAPHANDA RES.	539.81%	2000/08/31	MUR	MURRAY & ROBERTS	125.22%
1999/03/31	AVI	AVI	132.88%	1999/10/31	NHM	NORTHAM PLATINUM	123.66%	2000/08/31	NTC	NETWORK HLTHCR.	162.52%
1999/03/31	BPL	BARPLATS INVS.	136.62%	1999/11/30	BPL	BARPLATS INVS.	186.21%	2000/08/31	SOV	SOVEREIGN FOOD INVS.	288.31%
1999/03/31	BRM	BEARING MAN	107.37%	1999/11/30	BEL	BELL EQUIPMENT	100.65%	2000/08/31	SUR	SPUR	103.15%
1999/03/31	BEL	BELL EQUIPMENT	156.93%	1999/11/30	EXL	EXCELLERATE HDG.	151.24%	2000/08/31	WES	WESCO INVESTMENTS	125.60%
1999/03/31	BIL	BHP BILLITON (JSE)	114.91%	1999/11/30	MVL	MVELAPHANDA RES.	446.12%	2000/08/31	WBO	WILSON BAY HLM OVC	191.99%
1999/03/31	CSB	CASHBUILD	129.03%	1999/11/30	NHM	NORTHAM PLATINUM	119.19%	2000/09/30	AFR	AFGRI	315.36%
1999/03/31	DDT	DIMENSION DATA HDG.(JSE)	115.09%	1999/11/30	RBW	RAINBOW CHICKEN	103.28%	2000/09/30	APK	ASTRAPAK	127.04%
1999/03/31	ECO	EDGARS CONS.STORES	126.20%	1999/12/31	EXL	EXCELLERATE HDG.	119.77%	2000/09/30	CSB	CASHBUILD	121.96%
1999/03/31	GRF	GROUP FIVE	103.06%	1999/12/31	GND	GRINDROD	101.19%	2000/09/30	GDH	GOOD HOPE DIAMONDS	248.78%
1999/03/31	HCI	HOSKEN CONS.INV.	110.65%	1999/12/31	MVL	MVELAPHANDA RES.	584.90%	2000/09/30	MES	MESSINA	231.85%
1999/03/31	HDC	HUDACO	110.01%	1999/12/31	NHM	NORTHAM PLATINUM	107.96%	2000/09/30	MTA	METAIR INVESTMENTS	109.06%
1999/03/31	IDI	IDION TECH.	200.00%	1999/12/31	SRN	SEARDEL INV.	100.73%	2000/09/30	NTC	NETWORK HLTHCR.	132.80%
1999/03/31	IMP	IMPALA PLATINUM	122.14%	2000/01/31	AMS	ANGLO AMERICAN PLAT.	101.08%	2000/09/30	SOV	SOVEREIGN FOOD INVS.	117.70%
1999/03/31	JNC	JOHNNIC	164.41%	2000/01/31	MTA	METAIR INVESTMENTS	120.00%	2000/09/30	SUR	SPUR	120.43%
1999/03/31	JCM	JOHNNIC COMMS.	229.61%	2000/01/31	MVL	MVELAPHANDA RES.	636.06%	2000/09/30	TRE	TRENCOR	104.06%
1999/03/31	MES	MESSINA	119.97%	2000/02/29	AMS	ANGLO AMERICAN PLAT.	117.29%	2000/09/30	WES	WESCO INVESTMENTS	131.20%
1999/03/31	MMG	MICROMEGA HDG.	299.02%	2000/02/29	ENV	ENVIROSERV	115.43%	2000/09/30	WBO	WILSON BAY HLM OVC	218.68%
1999/03/31	MTN	MTN GROUP	275.42%	2000/02/29	GND	GRINDROD	104.39%	2000/10/31	AFR	AFGRI	295.18%
1999/03/31	MVL	MVELAPHANDA RES.	249.81%	2000/02/29	MTA	METAIR INVESTMENTS	120.00%	2000/10/31	APK	ASTRAPAK	147.57%
1999/03/31	NPN	NASPERS	168.14%	2000/02/29	MVL	MVELAPHANDA RES.	446.91%	2000/10/31	CSB	CASHBUILD	275.76%
1999/03/31	SBL	SABLE	122.31%	2000/02/29	NHM	NORTHAM PLATINUM	125.82%	2000/10/31	GDH	GOOD HOPE DIAMONDS	148.78%
1999/04/30	AVI	AVI	143.44%	2000/02/29	RBW	RAINBOW CHICKEN	131.82%	2000/10/31	GND	GRINDROD	100.67%
1999/04/30	BPL	BARPLATS INVS.	135.06%	2000/02/29	SOV	SOVEREIGN FOOD INVS.	121.43%	2000/10/31	GRF	GROUP FIVE	161.70%
1999/04/30	BEL	BELL EQUIPMENT	113.69%	2000/03/31	GND	GRINDROD	148.31%	2000/10/31	ILA	ILIAD AFRICA	113.85%
1999/04/30	CSB	CASHBUILD	102.14%	2000/03/31	MTA	METAIR INVESTMENTS	170.41%	2000/10/31	KGM	KAGISO MEDIA	171.29%
1999/04/30	ECO	EDGARS CONS.STORES	112.02%	2000/03/31	MVL	MVELAPHANDA RES.	428.88%	2000/10/31	MES	MESSINA	204.75%
1999/04/30	JNC	JOHNNIC	164.68%	2000/03/31	SCN	SCHARRIG MINING	112.24%	2000/10/31	MTA	METAIR INVESTMENTS	110.77%
1999/04/30	JCM	JOHNNIC COMMS.	167.20%	2000/03/31	SOV	SOVEREIGN FOOD INVS.	115.28%	2000/10/31	MLA	MITTAL STEEL SA.	157.41%
1999/04/30	MMG	M CROMEGA HDG.	123.55%	2000/04/30	AFR	AFGRI	233.69%	2000/10/31	MUR	MURRAY & ROBERTS	143.55%
1999/04/30	MTN	MTN GROUP	282.53%	2000/04/30	AMS	ANGLO AMERICAN PLAT.	136.67%	2000/10/31	MST	MUSTEK	106.40%
1999/04/30	MVL	MVELAPHANDA RES.	226.89%	2000/04/30	GDH	GOOD HOPE DIAMONDS	200.00%	2000/10/31	NTC	NETWORK HLTHCR.	199.25%
1999/04/30	NPN	NASPERS	120.19%	2000/04/30	GND	GRINDROD	127.30%	2000/10/31	SCN	SCHARRIG MINING	131.97%
1999/05/31	ART	ARGENT INDUSTRIAL	114.88%	2000/04/30	MDC	MEDI CLINIC	105.37%	2000/10/31	SOV	SOVEREIGN FOOD INVS.	138.68%
1999/05/31	AVI	AVI	182.01%	2000/04/30	MES	MESSINA	165.25%	2000/10/31	TRT	TOURISM INV.	110.63%
1999/05/31	BEL	BELL EQUIPMENT	272.10%	2000/04/30	MTA	METAIR INVESTMENTS	163.38%	2000/10/31	WES	WESCO INVESTMENTS	115.58%
1999/05/31	HCI	HOSKEN CONS.INV.	116.62%	2000/04/30	MVL	MVELAPHANDA RES.	428.17%	2000/10/31	WBO	WILSON BAY HLM OVC	252.23%
1999/05/31	JNC	JOHNNIC	157.19%	2000/04/30	NHM	NORTHAM PLATINUM	163.16%	2000/11/30	AFR	AFGRI	300.61%
1999/05/31	JCM	JOHNNIC COMMS.	140.60%	2000/04/30	RBW	RAINBOW CHICKEN	118.84%	2000/11/30	APK	ASTRAPAK	130.11%
1999/05/31	MMG	MICROMEGA HDG.	127.45%	2000/04/30	SCN	SCHARRIG MINING	132.61%	2000/11/30	CSB	CASHBUILD	324.07%
1999/05/31	MTN	MTN GROUP	286.06%	2000/04/30	SOV	SOVEREIGN FOOD INVS.	103.95%	2000/11/30	DRD	DRD GOLD	162.16%
1999/05/31	MVL	MVELAPHANDA RES.	440.69%	2000/04/30	SUR	SPUR	115.14%	2000/11/30	GFI	GOLD FIELDS	126.77%
1999/05/31	NPN	NASPERS	112.61%	2000/04/30	TRE	TRENCOR	104.39%	2000/11/30	GDH	GOOD HOPE DIAMONDS	148.78%
1999/05/31	SBL	SABLE	114.16%	2000/04/30	WES	WESCO INVESTMENTS	122.71%	2000/11/30	GRF	GROUP FIVE	169.81%
1999/06/30	AVI	AVI	119.81%	2000/04/30	WBO	WILSON BAY HLM OVC	120.42%	2000/11/30	HAR	HARMONY GOLD MNG.	110.39%
1999/06/30	BEL	BELL EQUIPMENT	364.60%	2000/05/31	AFR	AFGRI	259.19%	2000/11/30	ILA	ILIAD AFRICA	121.11%
1999/06/30	DDT	DIMENSION DATA HDG.(JSE)	112.40%	2000/05/31	AMS	ANGLO AMERICAN PLAT.	134.63%	2000/11/30	KGM	KAGISO MEDIA	119.61%
1999/06/30	EXL	EXCELLERATE HDG.	118.18%	2000/05/31	BPL	BARPLATS INVS.	110.08%	2000/11/30	MES	MESSINA	192.59%
1999/06/30	HCI	HOSKEN CONS.INV.	118.51%	2000/05/31	BRM	BEARING MAN	128.95%	2000/11/30	MTA	METAIR INVESTMENTS	100.76%
1999/06/30	JNC	JOHNNIC	144.03%	2000/05/31	GND	GRINDROD	126.79%	2000/11/30	MLA	MITTAL STEEL SA.	659.59%
1999/06/30	JCM	JOHNNIC COMMS.	152.71%	2000/05/31	IMP	IMPALA PLATINUM	109.59%	2000/11/30	MOB	MOBILE INDUSTRIES	103.12%
1999/06/30	MMG	MICROMEGA HDG.	238.73%	2000/05/31	MES	MESSINA	544.60%	2000/11/30	MBN	MOBILE INDUSTRIES 'N'	103.21%
1999/06/30	MTN	MTN GROUP	222.42%	2000/05/31	MTA	METAIR INVESTMENTS	172.99%	2000/11/30	MUR	MURRAY & ROBERTS	150.00%
1999/06/30	MVL	MVELAPHANDA RES.	629.16%	2000/05/31	MUR	MURRAY & ROBERTS	100.00%	2000/11/30	MST	MUSTEK	194.85%
1999/06/30	SBL	SABLE	106.84%	2000/05/31	MVL	MVELAPHANDA RES.	295.67%	2000/11/30	NTC	NETWORK HLTHCR.	214.60%
1999/07/31	BEL	BELL EQUIPMENT	306.91%	2000/05/31	NHM	NORTHAM PLATINUM	193.05%	2000/11/30	RBW	RAINBOW CHICKEN	113.71%
1999/07/31	DDT	DIMENSION DATA HDG.(JSE)	148.74%	2000/05/31	RBW	RAINBOW CHICKEN	141.89%	2000/11/30	SAP	SAPPI	126.86%
1999/07/31	EXL	EXCELLERATE HDG.	116.80%	2000/05/31	RLO	REUNERT	101.57%	2000/11/30	SOV	SOVEREIGN FOOD INVS.	274.66%
1999/07/31	HCI	HOSKEN CONS.INV.	111.70%	2000/05/31	SOV	SOVEREIGN FOOD INVS.	121.43%	2000/11/30	TRT	TOURISM INV.	102.17%
1999/07/31	JNC	JOHNNIC	126.24%	2000/05/31	SUR	SPUR	137.60%	2000/11/30	TRE	TRENCOR	124.40%
1999/07/31	MMG	MICROMEGA HDG.	119.17%	2000/05/31	TSX	TRANS HEX GROUP	163.51%	2000/11/30	WES	WESCO INVESTMENTS	112.84%
1999/07/31	MTN	MTN GROUP	178.55%	2000/05/31	TRE	TRENCOR	104.48%	2000/11/30	WBO	WILSON BAY HLM OVC	233.43%
1999/07/31	MVL	MVELAPHANDA RES.	866.81%	2000/05/31	WES	WESCO INVESTMENTS	148.69%	2000/12/31	AFR	AFGRI	257.50%
1999/07/31	RLO	REUNERT	104.16%	2000/05/31	WBO	WILSON BAY HLM OVC	177.13%	2000/12/31	ANG	ANGLOGOLD ASHANTI	100.69%
1999/07/31	SBL	SABLE	114.16%	2000/06/30	AFR	AFGRI	251.91%	2000/12/31	APK	ASTRAPAK	136.10%
1999/08/31	AMS	ANGLO AMERICAN PLAT.	106.84%	2000/06/30	BPL	BARPLATS INVS.	106.20%	2000/12/31	BIL	BHP BILLITON (JSE)	120.78%
1999/08/31	BEL	BELL EQUIPMENT	349.63%	2000/06/30	GDH	GOOD HOPE DIAMONDS	101.64%	2000/12/31	CSB	CASHBUILD	313.33%

Appendix A.5. Sample Extreme Winners Sorted by Date

Continued.

Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return
2000/12/31	DRD	DRD GOLD	181.66%	2001/04/30	RNG	RANDGOLD & EXP.	109.72%	2001/09/30	WNH	WINHOLD	141.05%
2000/12/31	GFI	GOLD FIELDS	135.25%	2001/05/31	AFL	AFLEASE GD.& UR.RES	329.65%	2001/10/31	AFL	AFLEASE GD.& UR.RES.	175.02%
2000/12/31	GDH	GOOD HOPE DIAMONDS	148.78%	2001/05/31	ANG	ANGLOGOLD ASHANTI	121.83%	2001/10/31	BRM	BEARING MAN	127.72%
2000/12/31	GRF	GROUP FIVE	130.47%	2001/05/31	CRG	CARGO CARRIERS	109.10%	2001/10/31	BRC	BRANDCORP	104.40%
2000/12/31	HAR	HARMONY GOLD MNG.	130.04%	2001/05/31	CSB	CASHBUILD	135.70%	2001/10/31	BRN	BRIMSTONE INV.'N'	103.64%
2000/12/31	INM	INMINS	102.78%	2001/05/31	CNC	CONCOR	122.22%	2001/10/31	CRG	CARGO CARRIERS	148.39%
2000/12/31	KGM	KAGISO MEDIA	123.67%	2001/05/31	CUL	CULLINAN	174.58%	2001/10/31	CSB	CASHBUILD	104.96%
2000/12/31	MES	MESSINA	158.99%	2001/05/31	DRD	DRD GOLD	461.85%	2001/10/31	CCT	CONNECTION GP.	108.78%
2000/12/31	MLA	MITTAL STEEL SA.	801.25%	2001/05/31	ERP	ERP.COM	122.22%	2001/10/31	CUL	CULLINAN	470.45%
2000/12/31	MOB	MOBILE INDUSTRIES	190.41%	2001/05/31	GFI	GOLD FIELDS	295.56%	2001/10/31	DRD	DRD GOLD	153.26%
2000/12/31	MBN	MOBILE INDUSTRIES 'N'	200.00%	2001/05/31	GDH	GOOD HOPE DIAMONDS	265.04%	2001/10/31	FRO	FRONTRANGE SLTN.	129.72%
2000/12/31	MUR	MURRAY & ROBERTS	126.12%	2001/05/31	HAR	HARMONY GOLD MNG.	284.96%	2001/10/31	GFI	GOLD FIELDS	178.66%
2000/12/31	MST	MUSTEK	154.37%	2001/05/31	JSC	JASCO ELTN.	216.62%	2001/10/31	GDH	GOOD HOPE DIAMONDS	100.49%
2000/12/31	NTC	NETWORK HLTHCR.	214.60%	2001/05/31	MRF	MERAFE RESOURCES	130.50%	2001/10/31	HAR	HARMONY GOLD MNG	155.78%
2000/12/31	RNG	RANDGOLD & EXP.	107.75%	2001/05/31	MLA	MITTAL STEEL SA.	606.24%	2001/10/31	IDI	IDION TECH.	204.55%
2000/12/31	SAP	SAPPI	121.81%	2001/05/31	MBN	MOBILE INDUSTRIES 'N'	110.56%	2001/10/31	ILA	ILIAD AFRICA	107.91%
2000/12/31	SOL	SASOL	125.43%	2001/05/31	MST	MUSTEK	112.40%	2001/10/31	JSC	JASCO ELTN.	257.77%
2000/12/31	SOV	SOVEREIGN FOOD INVS.	117.70%	2001/05/31	NTC	NETWORK HLTHCR.	101.39%	2001/10/31	MRF	MERAFE RESOURCES	153.42%
2000/12/31	TRE	TRENCOR	161.57%	2001/05/31	OMN	OMNIA	125.64%	2001/10/31	MES	MESSINA	134.37%
2000/12/31	WES	WESCO INVESTMENTS	120.17%	2001/05/31	RNG	RANDGOLD & EXP.	183.94%	2001/10/31	MLA	MITTAL STEEL SA.	748.55%
2000/12/31	WBO	WILSON BAY HLM OVC	231.96%	2001/05/31	STO	SETPOINT TECH.	198.90%	2001/10/31	MVL	MVELAPHANDA RES.	110.18%
2001/01/31	AFR	AFGRI	236.51%	2001/05/31	TRE	TRENCOR	101.10%	2001/10/31	NHM	NORTHAM PLATINUM	113.79%
2001/01/31	AFL	AFLEASE GD.& UR.RES.	138.58%	2001/06/30	AFL	AFLEASE GD.& UR.RES.	353.59%	2001/10/31	OMN	OMNIA	241.95%
2001/01/31	ANG	ANGLOGOLD ASHANTI	123.87%	2001/06/30	CRG	CARGO CARRIERS	112.95%	2001/10/31	TRT	TOURISM INV.	161.70%
2001/01/31	CSB	CASHBUILD	266.80%	2001/06/30	CSB	CASHBUILD	112.35%	2001/10/31	TSX	TRANS HEX GROUP	139.49%
2001/01/31	DRD	DRD GOLD	210.02%	2001/06/30	CUL	CULLINAN	174.58%	2001/10/31	TPC	TRANSPACO	263.62%
2001/01/31	GFI	GOLD FIELDS	160.05%	2001/06/30	DRD	DRD GOLD	364.81%	2001/10/31	WNH	WINHOLD	118.14%
2001/01/31	GDH	GOOD HOPE DIAMONDS	234.43%	2001/06/30	ERP	ERP.COM	172.22%	2001/11/30	AFL	AFLEASE GD.& UR.RES.	186.81%
2001/01/31	HAR	HARMONY GOLD MNG.	160.15%	2001/06/30	GFI	GOLD FIELDS	242.79%	2001/11/30	BRC	BRANDCORP	129.67%
2001/01/31	ILA	ILIAD AFRICA	110.76%	2001/06/30	GDH	GOOD HOPE DIAMONDS	298.37%	2001/11/30	CRG	CARGO CARRIERS	153.44%
2001/01/31	KGM	KAGISO MEDIA	115.29%	2001/06/30	HAR	HARMONY GOLD MNG.	209.92%	2001/11/30	CSB	CASHBUILD	138.40%
2001/01/31	MES	MESSINA	196.15%	2001/06/30	MRF	MERAFE RESOURCES	138.80%	2001/11/30	CUL	CULLINAN	425.42%
2001/01/31	MLA	MITTAL STEEL SA.	501.79%	2001/06/30	MLA	MITTAL STEEL SA.	744.54%	2001/11/30	DRD	DRD GOLD	142.39%
2001/01/31	MOB	MOBILE INDUSTRIES	122.06%	2001/06/30	RNG	RANDGOLD & EXP.	115.37%	2001/11/30	GFI	GOLD FIELDS	116.81%
2001/01/31	MBN	MOBILE INDUSTRIES 'N'	125.29%	2001/06/30	SAP	SAPPI	109.37%	2001/11/30	GDH	GOOD HOPE DIAMONDS	100.49%
2001/01/31	NTC	NETWORK HLTHCR.	120.90%	2001/06/30	STO	SETPOINT TECH.	154.88%	2001/11/30	HAR	HARMONY GOLD MNG.	109.39%
2001/01/31	RNG	RANDGOLD & EXP.	202.33%	2001/07/31	AFL	AFLEASE GD.& UR.RES.	190.25%	2001/11/30	IDI	IDION TECH.	114.67%
2001/01/31	SAP	SAPPI	126.96%	2001/07/31	CRG	CARGO CARRIERS	126.97%	2001/11/30	ILA	ILIAD AFRICA	138.53%
2001/01/31	TRE	TRENCOR	134.66%	2001/07/31	CSB	CASHBUILD	116.93%	2001/11/30	IVT	INVICTA	111.51%
2001/01/31	WBO	WILSON BAY HLM OVC	214.00%	2001/07/31	CUL	CULLINAN	139.19%	2001/11/30	JSC	JASCO ELTN.	274.97%
2001/02/28	AFR	AFGRI	194.85%	2001/07/31	DRD	DRD GOLD	389.21%	2001/11/30	MES	MESSINA	148.10%
2001/02/28	AFL	AFLEASE GD.& UR.RES.	149.98%	2001/07/31	ERP	ERP.COM	122.22%	2001/11/30	MTA	METAIR INVESTMENTS	136.32%
2001/02/28	ANG	ANGLOGOLD ASHANTI	123.45%	2001/07/31	GFI	GOLD FIELDS	229.98%	2001/11/30	MLA	MITTAL STEEL SA.	209.02%
2001/02/28	CSB	CASHBUILD	131.76%	2001/07/31	GDH	GOOD HOPE DIAMONDS	232.52%	2001/11/30	OMN	OMNIA	211.06%
2001/02/28	DRD	DRD GOLD	274.37%	2001/07/31	HAR	HARMONY GOLD MNG.	202.34%	2001/11/30	RNG	RANDGOLD & EXP.	121.87%
2001/02/28	GFI	GOLD FIELDS	219.48%	2001/07/31	INM	INMINS	107.35%	2001/11/30	TRT	TOURISM INV.	158.49%
2001/02/28	GDH	GOOD HOPE DIAMONDS	436.07%	2001/07/31	JSC	JASCO ELTN.	165.66%	2001/11/30	TSX	TRANS HEX GROUP	103.34%
2001/02/28	GND	GRINDROD	125.32%	2001/07/31	KGM	KAGISO MEDIA	103.74%	2001/11/30	TPC	TRANSPACO	210.02%
2001/02/28	HAR	HARMONY GOLD MNG.	217.95%	2001/07/31	MRF	MERAFE RESOURCES	154.15%	2001/11/30	WNH	WINHOLD	102.66%
2001/02/28	JSC	JASCO ELTN.	150.03%	2001/07/31	MLA	MITTAL STEEL SA.	802.49%	2001/12/31	AFL	AFLEASE GD.& UR.RES.	166.68%
2001/02/28	MES	MESSINA	128.58%	2001/07/31	OMN	OMNIA	182.73%	2001/12/31	AMA	AMAL.APPC.	108.07%
2001/02/28	MLA	MITTAL STEEL SA.	646.92%	2001/07/31	RNG	RANDGOLD & EXP.	106.66%	2001/12/31	ART	ARGENT INDUSTRIAL	128.08%
2001/02/28	MBN	MOBILE INDUSTRIES 'N'	100.53%	2001/08/31	AFL	AFLEASE GD.& UR.RES.	165.73%	2001/12/31	BRM	BEARING MAN	115.75%
2001/02/28	MST	MUSTEK	123.53%	2001/08/31	CRG	CARGO CARRIERS	124.09%	2001/12/31	BRC	BRANDCORP	131.99%
2001/02/28	NTC	NETWORK HLTHCR.	128.63%	2001/08/31	CSB	CASHBUILD	114.79%	2001/12/31	CRG	CARGO CARRIERS	102.83%
2001/02/28	OMN	OMNIA	149.96%	2001/08/31	CUL	CULLINAN	157.28%	2001/12/31	CSB	CASHBUILD	145.97%
2001/02/28	RNG	RANDGOLD & EXP.	125.80%	2001/08/31	DRD	DRD GOLD	421.39%	2001/12/31	CLH	CITY LODGE HOTELS	105.10%
2001/02/28	SAP	SAPPI	141.54%	2001/08/31	GFI	GOLD FIELDS	255.71%	2001/12/31	CUL	CULLINAN	374.58%
2001/02/28	TRE	TRENCOR	114.98%	2001/08/31	GDH	GOOD HOPE DIAMONDS	300.98%	2001/12/31	ECO	EDGARS CONS.STORES	111.26%
2001/02/28	WBO	WILSON BAY HLM OVC	191.34%	2001/08/31	HAR	HARMONY GOLD MNG.	285.43%	2001/12/31	GFI	GOLD FIELDS	114.46%
2001/03/31	AFR	AFGRI	244.43%	2001/08/31	INM	INMINS	109.07%	2001/12/31	GDH	GOOD HOPE DIAMONDS	100.49%
2001/03/31	AFL	AFLEASE GD.& UR.RES.	137.22%	2001/08/31	JSC	JASCO ELTN.	202.39%	2001/12/31	ILA	ILIAD AFRICA	122.88%
2001/03/31	ANG	ANGLOGOLD ASHANTI	164.21%	2001/08/31	KGM	KAGISO MEDIA	121.99%	2001/12/31	JSC	JASCO ELTN.	265.27%
2001/03/31	CSB	CASHBUILD	186.44%	2001/08/31	MRF	MERAFE RESOURCES	138.74%	2001/12/31	MES	MESSINA	136.11%
2001/03/31	CNC	CONCOR	105.88%	2001/08/31	MES	MESSINA	104.44%	2001/12/31	MTA	METAIR INVESTMENTS	125.91%
2001/03/31	CUL	CULLINAN	149.15%	2001/08/31	MLA	MITTAL STEEL SA.	760.33%	2001/12/31	MLA	MITTAL STEEL SA.	117.62%
2001/03/31	DRD	DRD GOLD	420.07%	2001/08/31	OMN	OMNIA	207.46%	2001/12/31	OMN	OMNIA	147.48%
2001/03/31	ERP	ERP.COM	200.00%	2001/08/31	TPC	TRANSPACO	114.30%	2001/12/31	RNG	RANDGOLD & EXP.	126.63%
2001/03/31	GFI	GOLD FIELDS	288.46%	2001/08/31	WNH	WINHOLD	118.14%	2001/12/31	TRT	TOURISM INV.	122.38%
2001/03/31	GDH	GOOD HOPE DIAMONDS	220.59%	2001/09/30	AFL	AFLEASE GD.& UR.RES.	145.84%	2001/12/31	TPC	TRANSPACO	280.02%
2001/03/31	HAR	HARMONY GOLD MNG.	239.58%	2001/09/30	AMA	AMAL.APPC.	103.83%	2001/12/31	WNH	WINHOLD	104.59%
2001/03/31	IMP	IMPALA PLATINUM	125.25%	2001/09/30	ANG	ANGLOGOLD ASHANTI	104.72%	2002/01/31	AFL	AFLEASE GD.& UR.RES.	108.08%
2001/03/31	JSC	JASCO ELTN.	179.99%	2001/09/30	BRM	BEARING MAN	142.86%	2002/01/31	AMA	AMAL.APPC.	143.00%
2001/03/31	LON	LONMIN (JSE)	125.63%	2001/09/30	BRC	BRANDCORP	102.05%	2002/01/31	ART	ARGENT INDUSTRIAL	119.81%
2001/03/31	MES	MESSINA	125.01%	2001/09/30	CRG	CARGO CARRIERS	186.30%	2002/01/31	BRC	BRANDCORP	114.01%
2001/03/31	MLA	MITTAL STEEL SA.	676.22%	2001/09/30	CSB	CASHBUILD	125.73%	2002/01/31	CRG	CARGO CARRIERS	191.50%
2001/03/31	MOB	MOBILE INDUSTRIES	116.57%	2001/09/30	CNC	CONCOR	117.88%	2002/01/31	CSB	CASHBUILD	136.09%
2001/03/31	MBN	MOBILE INDUSTRIES 'N'	103.97%	2001/09/30	CUL	CULLINAN	400.00%	2002/01/31	CUL	CULLINAN	268.18%
2001/03/31	OMN	OMNIA	221.32%	2001/09/30	DRD	DRD GOLD	318.23%	2002/01/31	ECO	EDGARS CONS.STORES	153.05%
2001/03/31	RNG	RANDGOLD & EXP.	124.19%	2001/09/30	ERP	ERP.COM	145.00%	2002/01/31	GDH	GOOD HOPE DIAMONDS	100.49%
2001/03/31	SAP	SAPPI	140.50%	2001/09/30	FRO	FRONTRANGE SLTN.	255.64%	2002/01/31	GRF	GROUP FIVE	103.41%
2001/03/31	TRE	TRENCOR	112.45%	2001/09/30	GFI	GOLD FIELDS	243.22%	2002/01/31	IDI	IDION TECH.	329.44%
2001/03/31	WBO	WILSON BAY HLM OVC	184.68%	2001/09/30	HAR	HARMONY GOLD MNG.	253.83%	2002/01/31	ILA	ILIAD AFRICA	151.57%
2001/04/30	AFL	AFLEASE GD.& UR.RES.	106.65%	2001/09/30	IDI	IDION TECH.	106.83%	2002/01/31	JSC	JASCO ELTN.	130.33%
2001/04/30	ANG	ANGLOGOLD ASHANTI	111.71%	2001/09/30	ILA	ILIAD AFRICA	156.28%	2002/01/31	MES	MESSINA	129.61%
2001/04/30	CSB	CASHBUILD	171.85%	2001/09/30	JSC	JASCO ELTN.	318.13%	2002/01/31	MLA	MITTAL STEEL SA.	148.92%
2001/04/30	CNC	CONCOR	181.24%	2001/09/30	KGM	KAGISO MEDIA	122.12%	2002/01/31	OMN	OMNIA	169.54%
2001/04/30	CUL	CULLINAN	149.15%	2001/09/30	MRF	MERAFE RESOURCES	171.81%	2002/01/31	RNG	RANDGOLD & EXP	183.09%
2001/04/30	DRD	DRD GOLD	468.08%	2001/09/30	MES	MESSINA	146.57%	2002/01/31	SKJ	SEKUNJALO INVS.	137.62%
2001/04/30	GFI	GOLD FIELDS	273.15%	2001/09/30	MTA	METAIR INVESTMENTS	100.70%	2002/01/31	TRT	TOURISM INV.	128.89%
2001/04/30	HAR	HARMONY GOLD MNG.	254.54%	2001/09/30	MLA	MITTAL STEEL SA.	813.45%	2002/01/31	TPC	TRANSPACO	190.12%
2001/04/30	JSC	JASCO ELTN.	400.17%	2001/09/30	MVL	MVELAPHANDA RES.	101.01%	2002/01/31	WNH	WINHOLD	101.44%
2001/04/30	KGM	KAGISO MEDIA	127.02%	2001/09/30	OMN	OMNIA	237.57%	2002/02/28	ART	ARGENT INDUSTRIAL	104.90%
2001/04/30	MLA	MITTAL STEEL SA.	743.92%	2001/09/30	RNG	RANDGOLD & EXP.	105.27%	2002/02/28	BRC	BRANDCORP	155.66%
2001/04/30	MOB	MOBILE INDUSTRIES	134.29%	2001/09/30	TRT	TOURISM INV.	114.50%	2002/02/28	BRN	BRIMSTONE INV.'N	104.48%
2001/04/30	MBN	MOBILE INDUSTRIES 'N'	119.21%	2001/09/30	TSX	TRANS HEX GROUP	119.58%	2002/02/28	CPI	CAPITEC BANK	166.15%
2001/04/30	NTC	NETWORK HLTHCR.	112.01%	2001/09/30	TPC	TRANSPACO	210.03%	2002/02/28	CRG	CARGO CARRIERS	164.23%
2001/04/30	OMN	OMNIA	158.09%	2001/09/30	VLE	VALUE GROUP	100.00%	2002/02/28	CSB	CASHBUILD	236.18%

Appendix A.5. Sample Extreme Winners Sorted by Date

Continued.

Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return
2002/02/28	CNL	CONTROL INSTRUMENTS GP.	123.69%	2002/09/30	PHM	PHUMELELA GMG.& LEIS.	243.59%	2003/02/28	AMA	AMAL.APPC.	156.93%
2002/02/28	CUL	CULLINAN	268.18%	2002/09/30	PIM	PRISM	203.33%	2003/02/28	BRC	BRANDCORP	105.63%
2002/02/28	DAW	DS.& WHSG.NETWORK	120.70%	2002/09/30	SCN	SCHARRIG MINING	110.65%	2003/02/28	BRN	BRIMSTONE INV.'N'	111.68%
2002/02/28	ECO	EDGARS CONS.STORES	133.39%	2002/09/30	SKJ	SEKUNJALO INVS.	186.42%	2003/02/28	CPI	CAPITEC BANK	133.70%
2002/02/28	FRO	FRONTRANGE SLTN.	325.75%	2002/09/30	SPS	SPESCOM	149.01%	2003/02/28	CCT	CONNECTION GP.	143.71%
2002/02/28	IDI	IDION TECH.	269.44%	2002/09/30	TPC	TRANSPACO	103.22%	2003/02/28	DTC	DATATEC	195.96%
2002/02/28	ILA	ILIAD AFRICA	217.98%	2002/09/30	VLE	VALUE GROUP	229.87%	2003/02/28	DGC	DIGICORE	163.36%
2002/02/28	IVT	INVICTA	105.98%	2002/10/31	AMA	AMAL.APPC.	135.22%	2003/02/28	DAW	DS.& WHSG.NETWORK	155.98%
2002/02/28	JSC	JASCO ELTN.	153.86%	2002/10/31	ARL	ASTRAL FOODS	108.86%	2003/02/28	ECO	EDGARS CONS.STORES	134.65%
2002/02/28	MST	MUSTEK	114.21%	2002/10/31	APK	ASTRAPAK	109.65%	2003/02/28	ERP	ERP.COM	168.09%
2002/02/28	OMN	OMNIA	134.27%	2002/10/31	CPI	CAPITEC BANK	109.47%	2003/02/28	GDF	GOLD REEF CNO.RSTS.	171.81%
2002/02/28	RNG	RANDGOLD & EXP.	110.72%	2002/10/31	CSB	CASHBUILD	186.67%	2003/02/28	GDH	GOOD HOPE DIAMONDS	199.76%
2002/02/28	SKJ	SEKUNJALO INVS.	105.21%	2002/10/31	DGC	DIGICORE	106.33%	2003/02/28	GND	GRINDROD	177.35%
2002/02/28	TRT	TOURISM INV.	131.44%	2002/10/31	DAW	DS.& WHSG.NETWORK	160.04%	2003/02/28	HWN	HOWDEN AFRICA	118.54%
2002/02/28	TPC	TRANSPACO	136.47%	2002/10/31	ECO	EDGARS CONS.STORES	176.71%	2003/02/28	INM	INMINS	199.17%
2002/02/28	VLE	VALUE GROUP	124.68%	2002/10/31	ERP	ERP.COM	177.48%	2003/02/28	JDG	JD GROUP	111.25%
2002/03/31	BRC	BRANDCORP	126.23%	2002/10/31	ILA	ILIAD AFRICA	114.36%	2003/02/28	KGM	KAGISO MEDIA	146.57%
2002/03/31	BRN	BRIMSTONE INV.'N'	104.48%	2002/10/31	INM	INMINS	137.38%	2003/02/28	MCU	M CUBED HOLDINGS	109.45%
2002/03/31	CPI	CAPITEC BANK	189.96%	2002/10/31	JCD	JCI	103.09%	2003/02/28	MLA	MITTAL STEEL SA.	103.21%
2002/03/31	CRG	CARGO CARRIERS	171.88%	2002/10/31	KGM	KAGISO MEDIA	104.34%	2003/02/28	MTN	MTN GROUP	133.31%
2002/03/31	CSB	CASHBUILD	235.18%	2002/10/31	KAP	KAP INTL.	106.25%	2003/02/28	PHM	PHUMELELA GMG.& LEIS.	120.91%
2002/03/31	CUL	CULLINAN	110.88%	2002/10/31	MTN	MTN GROUP	123.10%	2003/02/28	PMN	PRIMEDIA 'N'	103.80%
2002/03/31	DAW	DS.& WHSG.NETWORK	111.35%	2002/10/31	PHM	PHUMELELA GMG.& LEIS.	120.06%	2003/02/28	PIM	PRISM	159.09%
2002/03/31	ECO	EDGARS CONS.STORES	117.00%	2002/10/31	PIM	PRISM	115.22%	2003/02/28	SFN	SASFIN	148.03%
2002/03/31	IDI	IDION TECH.	144.56%	2002/10/31	RBW	RAINBOW CHICKEN	106.49%	2003/02/28	SCN	SCHARRIG MINING	108.40%
2002/03/31	ILA	ILIAD AFRICA	164.93%	2002/10/31	SKJ	SEKUNJALO INVS.	163.21%	2003/02/28	SPS	SPESCOM	211.40%
2002/03/31	JSC	JASCO ELTN.	112.85%	2002/10/31	VLE	VALUE GROUP	275.00%	2003/02/28	TPC	TRANSPACO	108.96%
2002/03/31	OMN	OMNIA	112.29%	2002/10/31	WNH	WINHOLD	118.89%	2003/02/28	VLE	VALUE GROUP	236.13%
2002/03/31	RNG	RANDGOLD & EXP.	109.36%	2002/11/30	AMA	AMAL.APPC.	122.97%	2003/02/28	WNH	WINHOLD	129.10%
2002/03/31	TPC	TRANSPACO	252.10%	2002/11/30	BRN	BRIMSTONE INV.'N'	150.00%	2003/03/31	ADR	ADCORP	118.60%
2002/03/31	VLE	VALUE GROUP	134.73%	2002/11/30	CSB	CASHBUILD	135.55%	2003/03/31	ADH	ADVTECH	141.89%
2002/03/31	WNH	WINHOLD	106.59%	2002/11/30	CCT	CONNECTION GP.	151.64%	2003/03/31	ABL	AFRICAN BANK INVS.	147.60%
2002/04/30	BRC	BRANDCORP	103.58%	2002/11/30	DAW	DS.& WHSG.NETWORK	163.77%	2003/03/31	AMA	AMAL.APPC.	199.71%
2002/04/30	BRN	BRIMSTONE INV.'N'	173.68%	2002/11/30	ECO	EDGARS CONS.STORES	152.15%	2003/03/31	ARL	ASTRAL FOODS	151.33%
2002/04/30	CRG	CARGO CARRIERS	222.48%	2002/11/30	ERP	ERP.COM	115.67%	2003/03/31	APK	ASTRAPAK	101.88%
2002/04/30	CSB	CASHBUILD	221.77%	2002/11/30	GDF	GOLD REEF CNO.RSTS.	110.01%	2003/03/31	BRC	BRANDCORP	118.83%
2002/04/30	ECO	EDGARS CONS.STORES	104.16%	2002/11/30	INM	INMINS	134.76%	2003/03/31	CPI	CAPITEC BANK	164.08%
2002/04/30	GDH	GOOD HOPE DIAMONDS	398.78%	2002/11/30	PIM	PRISM	240.00%	2003/03/31	CCT	CONNECTION GP.	158.82%
2002/04/30	ILA	ILIAD AFRICA	122.71%	2002/11/30	SPS	SPESCOM	127.07%	2003/03/31	DTC	DATATEC	294.61%
2002/04/30	OMN	OMNIA	134.97%	2002/11/30	TPC	TRANSPACO	125.81%	2003/03/31	DGC	DIGICORE	126.10%
2002/04/30	TPC	TRANSPACO	252.10%	2002/11/30	VLE	VALUE GROUP	213.20%	2003/03/31	DDT	DIMENSION DATA HDG.(JSE)	125.12%
2002/05/31	CPI	CAPITEC BANK	179.14%	2002/11/30	WNH	WINHOLD	143.47%	2003/03/31	DSY	DISCOVERY	113.43%
2002/05/31	CSB	CASHBUILD	200.34%	2002/12/31	ADH	ADVTECH	109.47%	2003/03/31	DAW	DS.& WHSG.NETWORK	162.26%
2002/05/31	CUL	CULLINAN	146.30%	2002/12/31	ABL	AFRICAN BANK INVS.	100.44%	2003/03/31	ECO	EDGARS CONS.STORES	197.19%
2002/05/31	DAW	DS.& WHSG.NETWORK	116.26%	2002/12/31	AMA	AMAL.APPC.	161.91%	2003/03/31	ERP	ERP.COM	157.14%
2002/05/31	ILA	ILIAD AFRICA	138.12%	2002/12/31	BRC	BRANDCORP	109.43%	2003/03/31	FBR	FAMOUS BRANDS	143.11%
2002/05/31	OMN	OMNIA	144.03%	2002/12/31	BRN	BRIMSTONE INV.'N	127.12%	2003/03/31	GDF	GOLD REEF CNO.RSTS.	140.19%
2002/05/31	TPC	TRANSPACO	292.88%	2002/12/31	CPI	CAPITEC BANK	109.90%	2003/03/31	GND	GRINDROD	233.64%
2002/06/30	BRN	BRIMSTONE INV.'N	113.10%	2002/12/31	CSB	CASHBUILD	141.19%	2003/03/31	ILA	ILIAD AFRICA	127.77%
2002/06/30	CPI	CAPITEC BANK	215.03%	2002/12/31	CCT	CONNECTION GP.	174.17%	2003/03/31	INM	INMINS	156.43%
2002/06/30	CSB	CASHBUILD	253.83%	2002/12/31	CUL	CULLINAN	118.93%	2003/03/31	JDG	JD GROUP	117.82%
2002/06/30	CUL	CULLINAN	136.42%	2002/12/31	DTC	DATATEC	103.71%	2003/03/31	JNC	JOHNNIC	111.30%
2002/06/30	DAW	DS.& WHSG.NETWORK	119.05%	2002/12/31	DGC	DIGICORE	147.39%	2003/03/31	KGM	KAGISO MEDIA	121.67%
2002/06/30	ECO	EDGARS CONS.STORES	113.69%	2002/12/31	DAW	DS.& WHSG.NETWORK	211.70%	2003/03/31	MTL	MERCANTILE BANK	106.90%
2002/06/30	ILA	ILIAD AFRICA	174.76%	2002/12/31	ECO	EDGARS CONS.STORES	161.80%	2003/03/31	MLA	MITTAL STEEL SA.	138.13%
2002/06/30	INM	INMINS	109.76%	2002/12/31	ERP	ERP.COM	153.03%	2003/03/31	MTN	MTN GROUP	175.14%
2002/06/30	OMN	OMNIA	123.40%	2002/12/31	GDF	GOLD REEF CNO.RSTS.	129.49%	2003/03/31	NPN	NASPERS	129.98%
2002/06/30	PHM	PHUMELELA GMG.& LEIS.	271.71%	2002/12/31	GDH	GOOD HOPE DIAMONDS	199.76%	2003/03/31	NWL	NU WORLD	137.03%
2002/06/30	TPC	TRANSPACO	228.60%	2002/12/31	ILA	ILIAD AFRICA	129.69%	2003/03/31	PHM	PHUMELELA GMG.& LEIS.	161.30%
2002/07/31	BRC	BRANDCORP	112.42%	2002/12/31	INM	INMINS	120.91%	2003/03/31	PMN	PRIMEDIA 'N'	126.79%
2002/07/31	CPI	CAPITEC BANK	199.77%	2002/12/31	JDG	JD GROUP	112.41%	2003/03/31	PIM	PRISM	170.49%
2002/07/31	CSB	CASHBUILD	277.05%	2002/12/31	KGM	KAGISO MEDIA	113.51%	2003/03/31	PSG	PSG GROUP	108.06%
2002/07/31	CPA	CORPCAPITAL	102.30%	2002/12/31	MTN	MTN GROUP	132.23%	2003/03/31	SFN	SASFIN	159.84%
2002/07/31	CUL	CULLINAN	133.90%	2002/12/31	PIM	PRISM	194.52%	2003/03/31	SCN	SCHARRIG MINING	118.21%
2002/07/31	DAW	DS.& WHSG.NETWORK	117.45%	2002/12/31	SKJ	SEKUNJALO INVS.	109.64%	2003/03/31	SKJ	SEKUNJALO INVS.	137.58%
2002/07/31	ECO	EDGARS CONS.STORES	134.00%	2002/12/31	SPS	SPESCOM	126.57%	2003/03/31	SPS	SPESCOM	299.91%
2002/07/31	ERP	ERP.COM	120.00%	2002/12/31	TPC	TRANSPACO	121.06%	2003/03/31	TKG	TELKOM	174.08%
2002/07/31	HWN	HOWDEN AFRICA	105.46%	2002/12/31	UCS	UCS GROUP	132.58%	2003/03/31	VLE	VALUE GROUP	252.20%
2002/07/31	IDI	IDION TECH.	111.78%	2002/12/31	VLE	VALUE GROUP	132.63%	2003/04/30	ADR	ADCORP	103.79%
2002/07/31	ILA	ILIAD AFRICA	187.42%	2002/12/31	WNH	WINHOLD	110.97%	2003/04/30	ADH	ADVTECH	121.34%
2002/07/31	KAP	KAP INTL.	115.38%	2003/01/31	ADH	ADVTECH	134.07%	2003/04/30	ABL	AFRICAN BANK INVS.	131.20%
2002/07/31	PHM	PHUMELELA GMG.& LEIS.	293.22%	2003/01/31	AMA	AMAL.APPC.	172.15%	2003/04/30	AMA	AMAL.APPC.	183.31%
2002/07/31	SKJ	SEKUNJALO INVS.	137.62%	2003/01/31	APK	ASTRAPAK	108.57%	2003/04/30	ARL	ASTRAL FOODS	163.74%
2002/07/31	TPC	TRANSPACO	237.16%	2003/01/31	BRC	BRANDCORP	142.84%	2003/04/30	APK	ASTRAPAK	117.39%
2002/07/31	VLE	VALUE GROUP	144.51%	2003/01/31	CPI	CAPITEC BANK	126.98%	2003/04/30	BRC	BRANDCORP	129.24%
2002/08/31	CPI	CAPITEC BANK	129.88%	2003/01/31	CCT	CONNECTION GP.	223.05%	2003/04/30	CCT	CONNECTION GP.	146.69%
2002/08/31	CSB	CASHBUILD	183.83%	2003/01/31	CPA	CORPCAPITAL	110.36%	2003/04/30	CUL	CULLINAN	108.30%
2002/08/31	CPA	CORPCAPITAL	128.87%	2003/01/31	DTC	DATATEC	167.09%	2003/04/30	DTC	DATATEC	188.71%
2002/08/31	DAW	DS.& WHSG.NETWORK	187.33%	2003/01/31	DGC	DIGICORE	168.10%	2003/04/30	DGC	DIGICORE	147.45%
2002/08/31	ECO	EDGARS CONS.STORES	131.32%	2003/01/31	DAW	DS.& WHSG.NETWORK	172.16%	2003/04/30	DDT	DIMENSION DATA HDG.(JSE)	150.55%
2002/08/31	ERP	ERP.COM	138.72%	2003/01/31	ECO	EDGARS CONS.STORES	108.56%	2003/04/30	DSY	DISCOVERY	121.46%
2002/08/31	ILA	ILIAD AFRICA	136.57%	2003/01/31	ERP	ERP.COM	187.19%	2003/04/30	DAW	DS.& WHSG.NETWORK	187.13%
2002/08/31	JCD	JCI	108.25%	2003/01/31	FRO	FRONTRANGE SLTN.	102.40%	2003/04/30	ECO	EDGARS CONS.STORES	175.47%
2002/08/31	PHM	PHUMELELA GMG.& LEIS.	283.02%	2003/01/31	GDF	GOLD REEF CNO.RSTS.	129.15%	2003/04/30	EOH	ENTER.OUTSC.	108.42%
2002/08/31	RNG	RANDGOLD & EXP.	100.58%	2003/01/31	GDH	GOOD HOPE DIAMONDS	199.76%	2003/04/30	ERP	ERP.COM	133.90%
2002/08/31	SCN	SCHARRIG MINING	110.65%	2003/01/31	GND	GRINDROD	136.35%	2003/04/30	FBR	FAMOUS BRANDS	120.17%
2002/08/31	SKJ	SEKUNJALO INVS.	117.92%	2003/01/31	HWN	HOWDEN AFRICA	102.23%	2003/04/30	FRO	FRONTRANGE SLTN.	114.84%
2002/08/31	TPC	TRANSPACO	106.67%	2003/01/31	INM	INMINS	147.66%	2003/04/30	GDF	GOLD REEF CNO.RSTS.	142.81%
2002/08/31	VLE	VALUE GROUP	182.83%	2003/01/31	KGM	KAGISO MEDIA	132.49%	2003/04/30	GDH	GOOD HOPE DIAMONDS	144.74%
2002/09/30	AMA	AMAL.APPC.	106.15%	2003/01/31	MTL	MERCANTILE BANK	141.38%	2003/04/30	GND	GRINDROD	245.72%
2002/09/30	CPI	CAPITEC BANK	129.88%	2003/01/31	MTN	MTN GROUP	127.70%	2003/04/30	GRF	GROUP FIVE	111.52%
2002/09/30	CSB	CASHBUILD	143.11%	2003/01/31	PHM	PHUMELELA GMG.& LEIS.	104.66%	2003/04/30	ILA	ILIAD AFRICA	122.96%
2002/09/30	CPA	CORPCAPITAL	141.42%	2003/01/31	PIM	PRISM	151.81%	2003/04/30	INM	INMINS	172.12%
2002/09/30	DAW	DS.& WHSG.NETWORK	126.21%	2003/01/31	SPS	SPESCOM	206.94%	2003/04/30	KGM	KAGISO MEDIA	157.02%
2002/09/30	ECO	EDGARS CONS.STORES	147.25%	2003/01/31	VLE	VALUE GROUP	220.83%	2003/04/30	LAN	LA GROUP 'N'	125.94%
2002/09/30	EOH	ENTER.OUTSC.	111.55%	2003/02/28	ADR	ADCORP	111.06%	2003/04/30	MMG	MICROMEGA HDG.	111.76%
2002/09/30	JNC	JOHNNIC	127.32%	2003/02/28	ADH	ADVTECH	142.45%	2003/04/30	MLA	MITTAL STEEL SA.	142.98%
2002/09/30	MTN	MTN GROUP	139.80%	2003/02/28	ABL	AFRICAN BANK INVS.	102.74%	2003/04/30	MTN	MTN GROUP	138.50%

Appendix A.5. Sample Extreme Winners Sorted by Date

Continued.

Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return
2003/04/30	MST	MUSTEK	111.75%	2003/07/31	PMA	PRIMEDIA	118.78%	2003/11/30	DAW	DS.& WHSG.NETWORK	242.65%
2003/04/30	NPN	NASPERS	118.21%	2003/07/31	PMN	PRIMEDIA 'N'	104.41%	2003/11/30	ECO	EDGARS CONS.STORES	155.05%
2003/04/30	NWL	NU WORLD	167.26%	2003/07/31	SFN	SASFIN	209.46%	2003/11/30	EOH	ENTER.OUTSC.	130.34%
2003/04/30	PHM	PHUMELELA GMG.& LEIS.	115.10%	2003/07/31	SCN	SCHARRIG MINING	117.11%	2003/11/30	EXL	EXCELLERATE HDG.	142.25%
2003/04/30	PMA	PRIMEDIA	103.70%	2003/07/31	WNH	WINHOLD	160.91%	2003/11/30	FBR	FAMOUS BRANDS	185.98%
2003/04/30	PMN	PRIMEDIA 'N'	180.29%	2003/08/31	AMA	AMAL.APPC.	150.30%	2003/11/30	FOS	FOSCHINI	101.86%
2003/04/30	PIM	PRISM	113.89%	2003/08/31	BPL	BARPLATS INVS.	191.07%	2003/11/30	FRO	FRONTRANGE SLTN.	139.95%
2003/04/30	SFN	SASFIN	159.44%	2003/08/31	BRC	BRANDCORP	115.54%	2003/11/30	GDF	GOLD REEF CNO.RSTS.	131.07%
2003/04/30	SCN	SCHARRIG MINING	170.03%	2003/08/31	DGC	DIGICORE	141.56%	2003/11/30	GND	GRINDROD	245.19%
2003/04/30	SKJ	SEKUNJALO INVS.	100.00%	2003/08/31	DAW	DS.& WHSG.NETWORK	188.73%	2003/11/30	HVL	HIGHVELD STL.& VNM.	237.16%
2003/04/30	SPS	SPESCOM	240.58%	2003/08/31	FBR	FAMOUS BRANDS	191.28%	2003/11/30	HCI	HOSKEN CONS.INV.	396.36%
2003/04/30	SPG	SUPER GROUP	112.67%	2003/08/31	FRO	FRONTRANGE SLTN.	185.71%	2003/11/30	HWN	HOWDEN AFRICA	111.52%
2003/04/30	TKG	TELKOM	143.15%	2003/08/31	GDF	GOLD REEF CNO.RSTS.	107.65%	2003/11/30	ILA	ILIAD AFRICA	103.91%
2003/04/30	TIW	TIGER WHEELS	111.32%	2003/08/31	GDH	GOOD HOPE DIAMONDS	165.69%	2003/11/30	IVT	INVICTA	106.65%
2003/04/30	UCS	UCS GROUP	120.05%	2003/08/31	GND	GRINDROD	214.96%	2003/11/30	KGM	KAGISO MEDIA	132.38%
2003/04/30	VLE	VALUE GROUP	365.20%	2003/08/31	HVL	HIGHVELD STL.& VNM.	106.88%	2003/11/30	LAN	LA GROUP 'N'	151.79%
2003/04/30	WNH	WINHOLD	179.17%	2003/08/31	HWN	HOWDEN AFRICA	120.75%	2003/11/30	MMG	MICROMEGA HDG.	207.69%
2003/05/31	ABL	AFRICAN BANK INVS.	126.27%	2003/08/31	INM	INMINS	126.62%	2003/11/30	MLA	MITTAL STEEL SA.	184.62%
2003/05/31	AMA	AMAL.APPC.	191.24%	2003/08/31	KGM	KAGISO MEDIA	115.87%	2003/11/30	OMN	OMNIA	114.18%
2003/05/31	BRC	BRANDCORP	110.90%	2003/08/31	LAR	LA GROUP	202.41%	2003/11/30	PHM	PHUMELELA GMG.& LEIS.	105.61%
2003/05/31	CCT	CONNECTION GP.	137.27%	2003/08/31	LAN	LA GROUP 'N'	150.78%	2003/11/30	PSG	PSG GROUP	115.50%
2003/05/31	DGC	DIGICORE	143.43%	2003/08/31	MMG	MICROMEGA HDG.	198.55%	2003/11/30	SFN	SASFIN	148.94%
2003/05/31	DAW	DS.& WHSG.NETWORK	143.83%	2003/08/31	MLA	MITTAL STEEL SA.	142.71%	2003/11/30	SCN	SCHARRIG MINING	145.24%
2003/05/31	ECO	EDGARS CONS.STORES	126.23%	2003/08/31	PMA	PRIMEDIA	112.29%	2003/11/30	SOV	SOVEREIGN FOOD INVS.	271.70%
2003/05/31	EOH	ENTER.OUTSC.	129.71%	2003/08/31	PMN	PRIMEDIA 'N'	113.73%	2003/11/30	BSB	THE HOUSE OF BUSBY	108.44%
2003/05/31	FBR	FAMOUS BRANDS	140.52%	2003/08/31	SFN	SASFIN	215.19%	2003/12/31	ABL	AFRICAN BANK INVS.	112.73%
2003/05/31	FRO	FRONTRANGE SLTN.	199.90%	2003/08/31	SCN	SCHARRIG MINING	109.75%	2003/12/31	AMA	AMAL.APPC.	129.03%
2003/05/31	GMB	GLENRAND M I B	108.66%	2003/08/31	SOV	SOVEREIGN FOOD INVS.	133.17%	2003/12/31	ART	ARGENT INDUSTRIAL	200.30%
2003/05/31	GDF	GOLD REEF CNO.RSTS	136.42%	2003/08/31	TKG	TELKOM	102.24%	2003/12/31	ARL	ASTRAL FOODS	126.48%
2003/05/31	GDH	GOOD HOPE DIAMONDS	144.74%	2003/08/31	WNH	WINHOLD	199.82%	2003/12/31	BPL	BARPLATS INVS.	421.54%
2003/05/31	GND	GRINDROD	222.13%	2003/09/30	ABL	AFRICAN BANK INVS.	112.89%	2003/12/31	CPI	CAPITEC BANK	158.00%
2003/05/31	HWN	HOWDEN AFRICA	110.27%	2003/09/30	AMA	AMAL.APPC.	151.66%	2003/12/31	CLE	CLIENTELE LF.ASR.	116.70%
2003/05/31	INM	INMINS	152.78%	2003/09/30	BPL	BARPLATS INVS.	124.83%	2003/12/31	CMH	COMBINED MOTOR	132.32%
2003/05/31	LAN	LA GROUP 'N'	167.12%	2003/09/30	BRC	BRANDCORP	137.80%	2003/12/31	CCT	CONNECTION GP.	101.35%
2003/05/31	MLA	MITTAL STEEL SA.	131.77%	2003/09/30	CPI	CAPITEC BANK	148.62%	2003/12/31	DGC	DIGICORE	254.79%
2003/05/31	MTN	MTN GROUP	122.66%	2003/09/30	CRG	CARGO CARRIERS	110.83%	2003/12/31	DAW	DS.& WHSG.NETWORK	223.50%
2003/05/31	NWL	NU WORLD	115.88%	2003/09/30	CCT	CONNECTION GP.	115.29%	2003/12/31	ECO	EDGARS CONS.STORES	145.42%
2003/05/31	PHM	PHUMELELA GMG.& LEIS.	137.02%	2003/09/30	DGC	DIGICORE	238.04%	2003/12/31	EOH	ENTER.OUTSC.	119.91%
2003/05/31	PMA	PRIMEDIA	118.98%	2003/09/30	DAW	DS.& WHSG.NETWORK	305.31%	2003/12/31	EXL	EXCELLERATE HDG.	125.97%
2003/05/31	PMN	PRIMEDIA 'N'	128.81%	2003/09/30	ECO	EDGARS CONS.STORES	121.89%	2003/12/31	FBR	FAMOUS BRANDS	178.97%
2003/05/31	SFN	SASFIN	161.01%	2003/09/30	FBR	FAMOUS BRANDS	267.55%	2003/12/31	FOS	FOSCHINI	109.16%
2003/05/31	SCN	SCHARRIG MINING	145.14%	2003/09/30	FRO	FRONTRANGE SLTN.	177.15%	2003/12/31	GDF	GOLD REEF CNO.RSTS.	118.55%
2003/05/31	SPS	SPESCOM	112.53%	2003/09/30	GDF	GOLD REEF CNO.RSTS.	108.76%	2003/12/31	GND	GRINDROD	246.62%
2003/05/31	TKG	TELKOM	140.43%	2003/09/30	GDH	GOOD HOPE DIAMONDS	316.73%	2003/12/31	HVL	HIGHVELD STL.& VNM.	230.56%
2003/05/31	UCS	UCS GROUP	120.85%	2003/09/30	GND	GRINDROD	237.05%	2003/12/31	HCI	HOSKEN CONS.INV.	561.87%
2003/05/31	VLE	VALUE GROUP	152.00%	2003/09/30	HVL	HIGHVELD STL.& VNM.	110.01%	2003/12/31	INM	INMINS	100.43%
2003/05/31	WNH	WINHOLD	129.66%	2003/09/30	HCI	HOSKEN CONS.INV.	201.49%	2003/12/31	IVT	INVICTA	102.21%
2003/06/30	ABL	AFRICAN BANK INVS.	126.13%	2003/09/30	HWN	HOWDEN AFRICA	108.99%	2003/12/31	KGM	KAGISO MEDIA	128.46%
2003/06/30	AMA	AMAL.APPC.	203.85%	2003/09/30	ILA	ILIAD AFRICA	100.05%	2003/12/31	KAP	KAP INTL.	212.50%
2003/06/30	ARL	ASTRAL FOODS	107.95%	2003/09/30	INM	INMINS	113.68%	2003/12/31	LAR	LA GROUP	169.45%
2003/06/30	BRC	BRANDCORP	117.88%	2003/09/30	KGM	KAGISO MEDIA	116.24%	2003/12/31	LAN	LA GROUP 'N'	240.11%
2003/06/30	CCT	CONNECTION GP.	132.94%	2003/09/30	LAR	LA GROUP	121.54%	2003/12/31	MMG	MICROMEGA HDG.	163.22%
2003/06/30	CNL	CONTROL INSTRUMENTS GP.	189.31%	2003/09/30	LAN	LA GROUP 'N'	126.55%	2003/12/31	MLA	MITTAL STEEL SA.	131.86%
2003/06/30	DGC	DIGICORE	182.89%	2003/09/30	MMG	MICROMEGA HDG.	365.22%	2003/12/31	OMN	OMNIA	103.93%
2003/06/30	DAW	DS.& WHSG.NETWORK	167.89%	2003/09/30	MLA	MITTAL STEEL SA.	133.48%	2003/12/31	PHM	PHUMELELA GMG.& LEIS.	135.20%
2003/06/30	ECO	EDGARS CONS.STORES	116.94%	2003/09/30	PMA	PRIMEDIA	120.37%	2003/12/31	PPC	PRETORIA POR.CMT.	119.64%
2003/06/30	EOH	ENTER.OUTSC.	106.88%	2003/09/30	PMN	PRIMEDIA 'N'	110.71%	2003/12/31	PSG	PSG GROUP	146.21%
2003/06/30	FBR	FAMOUS BRANDS	156.37%	2003/09/30	SFN	SASFIN	189.90%	2003/12/31	SBL	SABLE	129.52%
2003/06/30	FRO	FRONTRANGE SLTN.	140.00%	2003/09/30	SOV	SOVEREIGN FOOD INVS.	184.74%	2003/12/31	SFN	SASFIN	214.98%
2003/06/30	GDF	GOLD REEF CNO.RSTS.	121.33%	2003/09/30	WNH	WINHOLD	187.51%	2003/12/31	SCN	SCHARRIG MINING	100.28%
2003/06/30	GDH	GOOD HOPE DIAMONDS	144.74%	2003/10/31	ABL	AFRICAN BANK INVS.	105.80%	2003/12/31	SOV	SOVEREIGN FOOD INVS.	339.72%
2003/06/30	GND	GRINDROD	239.74%	2003/10/31	AMA	AMAL.APPC.	128.30%	2003/12/31	BSB	THE HOUSE OF BUSBY	108.88%
2003/06/30	GRF	GROUP FIVE	121.23%	2003/10/31	ART	ARGENT INDUSTRIAL	120.17%	2003/12/31	WNH	WINHOLD	120.35%
2003/06/30	HWN	HOWDEN AFRICA	111.99%	2003/10/31	BPL	BARPLATS INVS.	180.67%				
2003/06/30	ILA	ILIAD AFRICA	107.02%	2003/10/31	CPI	CAPITEC BANK	158.54%				
2003/06/30	INM	INMINS	108.50%	2003/10/31	CCT	CONNECTION GP.	104.30%				
2003/06/30	LAR	LA GROUP	102.93%	2003/10/31	DGC	DIGICORE	201.32%				
2003/06/30	LAN	LA GROUP 'N'	116.78%	2003/10/31	DAW	DS.& WHSG.NETWORK	215.90%				
2003/06/30	MMG	MICROMEGA HDG.	190.48%	2003/10/31	ECO	EDGARS CONS.STORES	122.73%				
2003/06/30	MLA	MITTAL STEEL SA.	157.90%	2003/10/31	EXL	EXCELLERATE HDG.	103.69%				
2003/06/30	PHM	PHUMELELA GMG.& LEIS.	106.12%	2003/10/31	FBR	FAMOUS BRANDS	182.05%				
2003/06/30	PMA	PRIMEDIA	124.16%	2003/10/31	FRO	FRONTRANGE SLTN.	148.83%				
2003/06/30	PMN	PRIMEDIA 'N'	127.00%	2003/10/31	GDF	GOLD REEF CNO.RSTS.	117.80%				
2003/06/30	SFN	SASFIN	173.41%	2003/10/31	GND	GRINDROD	203.46%				
2003/06/30	SCN	SCHARRIG MINING	101.78%	2003/10/31	HVL	HIGHVELD STL.& VNM.	145.51%				
2003/06/30	SPS	SPESCOM	108.01%	2003/10/31	HCI	HOSKEN CONS.INV.	414.39%				
2003/06/30	TKG	TELKOM	111.14%	2003/10/31	HWN	HOWDEN AFRICA	137.24%				
2003/06/30	UCS	UCS GROUP	113.92%	2003/10/31	ILA	ILIAD AFRICA	112.51%				
2003/06/30	VLE	VALUE GROUP	129.91%	2003/10/31	LAR	LA GROUP	126.71%				
2003/06/30	WNH	WINHOLD	143.55%	2003/10/31	LAN	LA GROUP 'N'	125.31%				
2003/07/31	AMA	AMAL.APPC.	200.72%	2003/10/31	MMG	MICROMEGA HDG.	240.58%				
2003/07/31	BRC	BRANDCORP	105.44%	2003/10/31	MLA	MITTAL STEEL SA.	139.36%				
2003/07/31	CCT	CONNECTION GP.	135.89%	2003/10/31	SBL	SABLE	100.09%				
2003/07/31	CNL	CONTROL INSTRUMENTS GP.	142.39%	2003/10/31	SFN	SASFIN	196.36%				
2003/07/31	DGC	DIGICORE	173.94%	2003/10/31	SCN	SCHARRIG MINING	122.92%				
2003/07/31	DAW	DS.& WHSG.NETWORK	271.79%	2003/10/31	SOV	SOVEREIGN FOOD INVS.	281.05%				
2003/07/31	FBR	FAMOUS BRANDS	172.20%	2003/10/31	BSB	THE HOUSE OF BUSBY	115.38%				
2003/07/31	FRO	FRONTRANGE SLTN.	168.38%	2003/10/31	WNH	WINHOLD	101.19%				
2003/07/31	GDH	GOOD HOPE DIAMONDS	227.12%	2003/11/30	ABL	AFRICAN BANK INVS.	115.12%				
2003/07/31	GND	GRINDROD	280.38%	2003/11/30	AMA	AMAL.APPC.	161.60%				
2003/07/31	ILA	ILIAD AFRICA	107.08%	2003/11/30	ART	ARGENT INDUSTRIAL	208.53%				
2003/07/31	INM	INMINS	153.75%	2003/11/30	ARL	ASTRAL FOODS	102.93%				
2003/07/31	KGM	KAGISO MEDIA	109.03%	2003/11/30	BPL	BARPLATS INVS.	327.03%				
2003/07/31	LAR	LA GROUP	130.76%	2003/11/30	BRC	BRANDCORP	106.02%				
2003/07/31	LAN	LA GROUP 'N'	140.12%	2003/11/30	CPI	CAPITEC BANK	200.93%				
2003/07/31	MMG	MICROMEGA HDG.	189.86%	2003/11/30	CLE	CLIENTELE LF.ASR.	108.35%				
2003/07/31	MLA	MITTAL STEEL SA.	139.09%	2003/11/30	CMH	COMBINED MOTOR	117.00%				
2003/07/31	NWL	NU WORLD	104.71%	2003/11/30	DGC	DIGICORE	247.49%				

Appendix A.6. Sample Extreme Winners Sorted by Return

The table lists 12 month periods of extreme performance for all extreme winners on the JSE Securities Exchange from January 1995 until December 2004 included in this study. An extreme winner is defined as a stock which at least doubles in a 12 month period. In addition to the names of all extreme performers, the table lists the share codes for each, the start date of the 12 month period of extreme performance, as well as the return over each of these periods. The lists are sorted by return.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
2199.76%	APN	ASPEN PHMCR.	1998/03/31	403.79%	JSC	JASCO ELTN.	1997/05/31	286.90%	DCT	DATACENTRIX	1998/12/31
1926.50%	ABL	AFRICAN BANK INVS.	1995/01/31	402.64%	PSG	PSG GROUP	1995/06/30	288.56%	WNH	WINHOLD	1998/08/31
1555.59%	BTG	BYTES TECH.GP.	1997/04/30	402.30%	HCI	HOSKEN CONS.INV.	1995/04/30	286.46%	GFI	GOLD FIELDS	2001/03/31
1397.28%	PSG	PSG GROUP	1995/10/31	400.17%	JSC	JASCO ELTN.	2001/04/30	288.31%	SOV	SOVEREIGN FOOD INVS.	2000/08/31
1224.86%	APN	ASPEN PHMCR.	1998/02/28	400.16%	LAR	LA GROUP	1995/10/31	287.93%	BPL	BARPLATS INVS.	1999/01/31
1160.94%	BTG	BYTES TECH.GP.	1997/05/31	400.00%	CUL	CULLINAN	2001/09/30	286.52%	MES	MESSINA	1998/04/30
1103.46%	APN	ASPEN PHMCR.	1998/04/30	399.94%	APN	ASPEN PHMCR.	1997/09/30	286.06%	MTN	MTN GROUP	1999/05/31
1084.80%	PSG	PSG GROUP	1995/08/31	398.78%	GDH	GOOD HOPE DIAMONDS	2002/04/30	285.71%	JSC	JASCO ELTN.	1997/06/30
1051.96%	PSG	PSG GROUP	1995/11/30	398.36%	HCI	HOSKEN CONS.INV.	2003/11/30	285.55%	ECO	EDGARS CONS.STORES	1999/01/31
1036.33%	APN	ASPEN PHMCR.	1998/01/31	389.81%	HCI	HOSKEN CONS.INV.	1995/10/31	285.43%	HAR	HARMONY GOLD MNG.	2001/06/31
897.18%	MVL	MVELAPHANDA RES.	1999/08/31	389.78%	APN	ASPEN PHMCR.	1997/06/30	284.98%	HAR	HARMONY GOLD MNG.	2001/05/31
885.60%	PSG	PSG GROUP	1995/09/30	389.21%	DRD	DRD GOLD	2001/07/31	284.71%	BRM	BEARING MAN	1936/02/29
866.81%	MVL	MVELAPHANDA RES.	1999/07/31	386.41%	ABL	AFRICAN BANK INVS.	1996/12/31	284.21%	KGM	KAGISO MEDIA	1995/03/31
838.43%	FRO	FRONTRANGE SLTN.	1997/09/30	384.65%	DTC	DATATEC	1995/03/31	283.02%	PHM	PHUMELELA GMG.& LEIS.	2002/08/31
821.79%	BTG	BYTES TECH.GP.	1997/02/28	383.62%	SPG	SUPER GROUP	1995/09/30	282.53%	MTN	MTN GROUP	1999/04/30
813.45%	MLA	MITTAL STEEL SA.	2001/09/30	380.04%	LAR	LA GROUP	1995/09/30	281.05%	SOV	SOVEREIGN FOOD INVS.	2003/10/31
802.49%	MLA	MITTAL STEEL SA.	2001/07/31	380.00%	WNH	WINHOLD	1998/03/31	280.74%	JCM	JOHNNIC COMMS.	1998/02/28
801.25%	MLA	MITTAL STEEL SA.	2000/12/31	378.07%	BCX	BUSINESS CONNEXION GROUP	1995/12/31	280.38%	GND	GRINDROD	2003/07/31
792.63%	FRO	FRONTRANGE SLTN.	1997/11/30	376.17%	TPC	TRANSPACO	1995/05/31	280.04%	LAR	LA GROUP	1995/07/31
791.70%	FRO	FRONTRANGE SLTN.	1998/01/31	375.11%	LAR	LA GROUP	1995/12/31	280.02%	TPC	TRANSPACO	2001/12/31
791.03%	BTG	BYTES TECH.GP.	1997/03/31	374.58%	CUL	CULLINAN	2001/12/31	279.54%	LAR	LA GROUP	1998/08/31
780.33%	MLA	MITTAL STEEL SA.	2001/08/31	365.22%	MMG	MICROMEGA HDG.	2003/09/30	278.90%	NPN	NASPERS	1999/02/26
748.55%	MLA	MITTAL STEEL SA.	2001/10/31	365.20%	VLE	VALUE GROUP	2003/04/30	277.72%	LAR	LA GROUP	1995/11/30
744.54%	MLA	MITTAL STEEL SA.	2001/06/30	364.81%	DRD	DRD GOLD	2001/08/30	277.47%	JNC	JOHNNIC	1998/02/28
743.92%	MLA	MITTAL STEEL SA.	2001/04/30	364.80%	BEL	BELL EQUIPMENT	1999/06/30	277.05%	CSB	CASHBUILD	2002/07/31
734.53%	ABL	AFRICAN BANK INVS.	1997/04/30	362.49%	DTC	DATATEC	1995/02/28	276.14%	MRF	MERAFE RESOURCES	1997/05/30
730.00%	FRO	FRONTRANGE SLTN.	1997/10/31	361.90%	BPL	BARPLATS INVS.	1998/07/31	276.07%	ABL	AFRICAN BANK INVS.	1997/10/31
728.70%	APN	ASPEN PHMCR.	1997/12/31	360.51%	ABL	AFRICAN BANK INVS.	1998/10/31	275.76%	CSB	CASHBUILD	2000/10/31
722.10%	APN	ASPEN PHMCR.	1998/05/31	354.31%	DTC	DATATEC	1995/04/30	275.42%	MTN	MTN GROUP	1999/03/31
709.12%	CMH	COMBINED MOTOR	1995/01/31	353.59%	AFL	AFLEASE GD.& UR.RES.	2001/06/30	275.24%	DTC	DATATEC	1995/08/31
693.88%	TPC	TRANSPACO	1995/03/31	351.12%	SFN	SASFIN	1995/01/31	275.00%	VLE	VALUE GROUP	2002/10/31
678.32%	FRO	FRONTRANGE SLTN.	1997/12/31	350.53%	ECO	EDGARS CONS.STORES	1998/12/31	274.97%	JSC	JASCO ELTN.	2001/11/30
676.22%	MLA	MITTAL STEEL SA.	2001/03/31	349.63%	BEL	BELL EQUIPMENT	1999/08/31	274.81%	LAR	LA GROUP	1995/04/30
659.59%	MLA	MITTAL STEEL SA.	2000/11/30	345.24%	BPL	BARPLATS INVS.	1998/12/31	274.68%	SOV	SOVEREIGN FOOD INVS.	2000/11/30
658.26%	ABL	AFRICAN BANK INVS.	1997/05/31	341.20%	DTC	DATATEC	1995/05/31	274.37%	DRD	DRD GOLD	2001/02/28
657.36%	MVL	MVELAPHANDA RES.	1999/09/30	340.60%	ABL	AFRICAN BANK INVS.	1996/08/30	274.25%	WBO	WILSON BAY HLM OVC	2000/06/30
646.92%	MLA	MITTAL STEEL SA.	2001/02/28	340.02%	LAR	LA GROUP	1995/08/31	273.15%	GFI	GOLD FIELDS	2001/04/30
645.84%	ABL	AFRICAN BANK INVS.	1997/02/28	339.98%	TPC	TRANSPACO	1997/03/31	273.05%	SPG	SUPER GROUP	1995/07/31
643.89%	APN	ASPEN PHMCR.	1997/11/30	339.72%	SOV	SOVEREIGN FOOD INVS.	2003/12/31	272.46%	KGM	KAGISO MEDIA	1995/02/28
636.06%	MVL	MVELAPHANDA RES.	2000/01/31	338.60%	BCX	BUSINESS CONNEXION GROUP	1995/10/31	272.10%	BEL	BELL EQUIPMENT	1999/05/31
633.09%	ABL	AFRICAN BANK INVS.	1997/01/31	338.46%	WNH	WINHOLD	1996/05/31	271.79%	DAW	DS.& WHSG.NETWORK	2003/07/31
629.16%	MVL	MVELAPHANDA RES.	1999/06/30	335.16%	HCI	HOSKEN CONS.INV.	1995/11/30	271.74%	PSG	PSG GROUP	1995/07/31
608.51%	APN	ASPEN PHMCR.	1997/07/31	334.78%	WNH	WINHOLD	1996/02/29	271.71%	PHM	PHUMELELA GMG.& LEIS.	2002/08/30
606.24%	MLA	MITTAL STEEL SA.	2001/05/31	334.66%	LAR	LA GROUP	1996/03/31	271.70%	SOV	SOVEREIGN FOOD INVS.	2003/11/30
603.46%	ABL	AFRICAN BANK INVS.	1996/06/31	334.61%	ABL	AFRICAN BANK INVS.	1997/07/31	271.43%	WNH	WINHOLD	1996/07/31
601.64%	HCI	HOSKEN CONS.INV.	1995/03/31	333.33%	WNH	WINHOLD	1996/04/30	269.96%	ABL	AFRICAN BANK INVS.	1996/05/31
584.90%	MVL	MVELAPHANDA RES.	1999/12/31	329.65%	AFL	AFLEASE GD.& UR.RES.	2001/05/31	269.44%	IDI	IDION TECH.	2002/02/28
582.16%	TPC	TRANSPACO	1995/04/30	329.57%	PSG	PSG GROUP	1995/05/31	269.17%	MVL	MVELAPHANDA RES.	1999/02/28
561.87%	HCI	HOSKEN CONS.INV.	2003/12/31	329.44%	IDI	IDION TECH.	2002/01/31	268.56%	SFN	SASFIN	1998/07/31
549.83%	IDI	IDION TECH.	1999/01/31	327.03%	BPL	BARPLATS INVS.	2003/11/30	268.18%	CUL	CULLINAN	2002/01/31
546.87%	TPC	TRANSPACO	1995/02/28	325.75%	FRO	FRONTRANGE SLTN.	2002/02/28	268.18%	CUL	CULLINAN	2002/02/28
544.60%	MES	MESSINA	2000/05/31	325.24%	SPG	SUPER GROUP	1995/08/31	267.55%	FBR	FAMOUS BRANDS	2003/08/30
539.81%	MVL	MVELAPHANDA RES.	1999/10/31	324.07%	CSB	CASHBUILD	2000/11/30	266.80%	CSB	CASHBUILD	2001/01/31
538.46%	MMG	MICROMEGA HDG.	1999/01/31	323.62%	BCX	BUSINESS CONNEXION GROUP	1995/11/30	266.67%	BPL	BARPLATS INVS.	1998/04/30
537.88%	ABL	AFRICAN BANK INVS.	1996/07/31	322.08%	MTN	MTN GROUP	1999/02/28	265.98%	MVL	MVELAPHANDA RES.	1998/11/30
519.02%	PSG	PSG GROUP	1995/12/31	321.84%	HCI	HOSKEN CONS.INV.	1995/05/31	265.82%	DTC	DATATEC	1997/07/31
517.07%	BTG	BYTES TECH.GP.	1997/06/30	321.54%	ABL	AFRICAN BANK INVS.	1996/11/30	265.27%	JSC	JASCO ELTN.	2001/12/31
503.59%	ABL	AFRICAN BANK INVS.	1997/03/31	320.01%	BCX	BUSINESS CONNEXION GROUP	1996/01/31	265.04%	GDH	GOOD HOPE DIAMONDS	2001/05/31
501.79%	MLA	MITTAL STEEL SA.	2001/01/31	318.23%	DRD	DRD GOLD	2001/09/30	264.59%	AFR	AFGRI	2000/07/31
490.48%	WNH	WINHOLD	1996/06/30	316.13%	JSC	JASCO ELTN.	2001/09/30	264.29%	IDI	IDION TECH.	1998/10/31
487.52%	MES	MESSINA	2000/06/30	317.48%	DTC	DATATEC	1997/04/30	263.79%	ABL	AFRICAN BANK INVS.	1995/05/31
484.36%	CPA	CORPCAPITAL	1996/03/31	316.73%	GDH	GOOD HOPE DIAMONDS	2003/09/30	263.62%	TPC	TRANSPACO	2001/10/31
479.14%	MMG	MICROMEGA HDG.	1999/02/28	315.36%	AFR	AFGRI	2000/09/30	261.73%	IMP	IMPALA PLATINUM	1998/10/31
477.51%	MES	MESSINA	2000/07/31	313.33%	CSB	CASHBUILD	2000/12/31	261.45%	HCI	HOSKEN CONS.INV.	1995/01/31
476.96%	MES	MESSINA	2000/08/31	312.14%	HCI	HOSKEN CONS.INV.	1995/09/30	260.89%	MTN	MTN GROUP	1999/01/31
476.63%	ABL	AFRICAN BANK INVS.	1995/02/28	308.77%	ABL	AFRICAN BANK INVS.	1995/08/30	260.64%	RAH	REAL AFRICA	1998/08/31
474.89%	ABL	AFRICAN BANK INVS.	1997/08/30	306.91%	BEL	BELL EQUIPMENT	1999/07/31	259.69%	DTC	DATATEC	1995/09/30
472.73%	DTC	DATATEC	1995/08/30	306.54%	ABL	AFRICAN BANK INVS.	1995/04/30	259.49%	DTC	DATATEC	1997/03/31
471.38%	TPC	TRANSPACO	1995/08/30	306.42%	CPA	CORPCAPITAL	1995/09/30	259.19%	AFR	AFGRI	2000/05/31
471.38%	TPC	TRANSPACO	1995/07/31	306.25%	BPL	BARPLATS INVS.	1998/02/28	259.13%	BRM	BEARING MAN	1995/11/30
470.45%	CUL	CULLINAN	2001/10/31	306.18%	BEL	BELL EQUIPMENT	1999/06/30	258.24%	BCX	BUSINESS CONNEXION GROUP	1995/07/31
468.06%	DRD	DRD GOLD	2001/04/30	305.96%	BCX	BUSINESS CONNEXION GROUP	1995/09/30	257.99%	PSG	PSG GROUP	1995/04/30
466.46%	IDI	IDION TECH.	1999/02/28	305.31%	DAW	DS.& WHSG.NETWORK	2003/09/30	257.77%	JSC	JASCO ELTN.	2001/10/31
462.43%	APN	ASPEN PHMCR.	1997/10/31	304.85%	LAR	LA GROUP	1996/01/31	257.50%	AFR	AFGRI	2000/12/31
461.95%	DRD	DRD GOLD	2001/05/31	304.58%	MES	MESSINA	1998/05/31	256.91%	GDF	GOLD REEF CNO.RSTS.	1998/09/30
460.47%	DTC	DATATEC	1995/07/31	304.58%	MES	MESSINA	1998/06/30	255.71%	GFI	GOLD FIELDS	2001/08/31
459.37%	ABL	AFRICAN BANK INVS.	1996/09/30	301.65%	ADR	ADCORP	1996/01/31	255.64%	FRO	FRONTRANGE SLTN.	2001/09/30
452.87%	HCI	HOSKEN CONS.INV.	1995/02/28	300.96%	GDH	GOOD HOPE DIAMONDS	2001/08/31	255.60%	STO	SETPOINT TECH.	1997/12/31
449.86%	TPC	TRANSPACO	1995/01/31	300.94%	SFN	SASFIN	1996/08/31	255.54%	MES	MESSINA	1998/07/31
447.85%	APN	ASPEN PHMCR.	1997/08/31	300.61%	AFR	AFGRI	2000/11/30	254.94%	PSG	PSG GROUP	1995/07/31
446.91%	MVL	MVELAPHANDA RES.	2000/02/29	299.91%	SPS	SPESCOM	2003/03/31	254.83%	IDI	IDION TECH.	1998/08/31
446.12%	MVL	MVELAPHANDA RES.	1999/11/30	299.88%	LAR	LA GROUP	1995/05/31	254.79%	DGC	DIGICORE	2003/12/31
440.69%	MVL	MVELAPHANDA RES.	1999/05/31	299.02%	MMG	MICROMEGA HDG.	1999/03/31	254.54%	HAR	HARMONY GOLD MNG.	2001/04/30
440.29%	BTG	BYTES TECH.GP.	1997/07/31	298.37%	GDH	GOOD HOPE DIAMONDS	2001/05/30	254.37%	ADR	ADCORP	1995/06/30
436.07%	GDH	GOOD HOPE DIAMONDS	2001/02/28	298.18%	BCX	BUSINESS CONNEXION GROUP	1995/06/31	254.02%	INM	INMINS	1998/05/31
428.86%	MVL	MVELAPHANDA RES.	2000/03/31	297.26%	KGM	KAGISO MEDIA	1995/04/30	253.94%	MRF	MERAFE RESOURCES	1997/05/31
428.17%	MVL	MVELAPHANDA RES.	2000/04/30	296.81%	MVL	MVELAPHANDA RES.	1998/08/31	253.83%	HAR	HARMONY GOLD MNG.	2001/09/30
425.42%	CUL	CULLINAN	2001/11/30	295.67%	MVL	MVELAPHANDA RES.	2000/05/31	253.83%	CSB	CASHBUILD	2002/06/30
423.81%	BPL	BARPLATS INVS.	1998/06/30	295.56%	GFI	GOLD FIELDS	2001/05/31	253.80%	BTG	BYTES TECH.GP.	1997/01/31
423.78%	IDI	IDION TECH.	1998/12/31	295.28%	AFR	AFGRI	2000/08/31	253.36%	LAR	LA GROUP	1998/04/30
422.83%	HCI	HOSKEN CONS.INV.	1995/12/31	295.18%	AFR	AFGRI	2000/10/31	252.36%	ABL	AFRICAN BANK INVS.	1995/07/31
421.54%	BPL	BARPLATS INVS.	2003/12/31	294.75%	TPC	TRANSPACO	1997/04/30	252.23%	WBO	WILSON BAY HLM OVC	2000/10/31
421.39%	DRD	DRD GOLD	2001/06/31	294.61%	DTC	DATATEC	2003/03/31	252.20%	VLE	VALUE GROUP	2003/03/31
420.79%	DAW	DS.& WHSG.NETWORK	1998/02/28	293.22%	PHM	PHUMELELA GMG.& LEIS.	2002/07/31	252.10%	TPC	TRANSPACO	2002/03/31
420.07%	ORD	ORD GOLD	2001/03/31	292.68%	TPC	TRANSPACO	2002/05/31	252.10%	TPC	TRANSPACO	2002/04/30
414.39%	HCI	HOSKEN CONS.INV.	2003/10/31	292.38%	DTC	DATATEC	1997/05/31	251.91%	AFR	AFGRI	2000/06/30
413.97%	DTC	DATATEC	1995/01/31	292.15%	LAR	LA GROUP	1996/06/30	251.02%	ADR	ADCORP	1995/12/31
407.44%	ABL	AFRICAN BANK INVS.	1995/03/31	288.98%	JSC	JASCO ELTN.	1997/04/30	250.96%	BRM	BEARING MAN	1995/12/31

Appendix A.6. Sample Extreme Winners Sorted by Return

Continued.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
250.74%	STO	SETPOINT TECH.	1997/11/30	221.83%	LAR	LA GROUP	1996/05/31	199.90%	FRO	FRONTRANGE SLTN.	2003/05/31
250.52%	KGM	KAGISO MEDIA	1995/01/31	221.77%	CSB	CASHBUILD	2002/04/30	199.82%	WNH	WINHOLD	2003/08/31
249.98%	TPC	TRANSPACO	1997/02/28	221.38%	IDI	IDION TECH.	1998/11/30	199.77%	CPI	CAPITEC BANK	2002/07/31
249.81%	MVL	MVELAPHANDA RES.	1999/03/31	221.32%	OMN	OMNIA	2001/03/31	199.76%	GDH	GOOD HOPE DIAMONDS	2002/12/31
249.28%	RAH	REAL AFRICA	1996/07/31	221.21%	RAH	REAL AFRICA	1995/10/31	199.76%	GDH	GOOD HOPE DIAMONDS	2003/01/31
248.78%	GDH	GOOD HOPE DIAMONDS	2000/09/30	220.83%	VLE	VALUE GROUP	2003/01/31	199.76%	GDH	GOOD HOPE DIAMONDS	2003/02/28
247.49%	DGC	DIGICORE	2003/11/30	220.59%	GDH	GOOD HOPE DIAMONDS	2001/03/31	199.71%	AMA	AMAL.APPC.	2003/03/31
247.14%	ADR	ADCORP	1996/02/29	219.48%	GFI	GOLD FIELDS	2001/02/28	199.56%	MTA	METAIR INVESTMENTS	2000/07/31
246.67%	HCI	HOSKEN CONS.INV.	1995/06/30	219.44%	TPC	TRANSPACO	1997/05/31	199.40%	JSC	JASCO ELTN.	1997/12/31
246.62%	GND	GRINDROD	2003/12/31	218.68%	WBO	WILSON BAY HLM OVC	2000/09/30	199.25%	NTC	NETWORK HLTHCR.	2000/10/31
246.26%	INM	INMINS	1996/11/30	218.21%	PSG	PSG GROUP	1995/03/31	199.17%	INM	INMINS	2003/02/28
245.72%	GND	GRINDROD	2003/04/30	218.18%	TPC	TRANSPACO	1996/11/30	198.96%	IMP	IMPALA PLATINUM	1996/11/30
245.19%	GND	GRINDROD	2003/11/30	217.98%	ILA	ILIAD AFRICA	2002/02/28	198.90%	STO	SETPOINT TECH.	2001/05/31
245.12%	DAW	DS.& WHSG.NETWORK	1998/01/31	217.95%	HAR	HARMONY GOLD MNG.	2001/02/28	198.55%	MMG	MICROMEGA HDG.	2003/08/31
245.05%	WBO	WILSON BAY HLM OVC	2000/07/31	217.64%	NPN	NASPERS	1999/01/31	197.79%	SFN	SASFIN	1997/04/30
244.44%	PSG	PSG GROUP	1996/08/31	216.87%	CRM	CERAMIC INDUSTRIES	1997/05/31	197.67%	BRM	BEARING MAN	1995/08/31
244.43%	AFR	AFGRI	2001/03/31	216.85%	ADR	ADCORP	1995/05/31	197.55%	BTG	BYTES TECH.GP.	1996/08/31
243.75%	BPL	BARPLATS INVS	1996/08/31	216.74%	MES	MESSINA	1996/12/31	197.27%	BTG	BYTES TECH.GP.	1997/10/31
243.67%	MVL	MVELAPHANDA RES.	1998/12/31	216.62%	JSC	JASCO ELTN.	2001/05/31	197.19%	ECO	EDGARS CONS.STORES	2003/03/31
243.55%	PHM	PHUMELELA GMG & LEIS.	2002/09/30	215.90%	DAW	DS.& WHSG.NETWORK	2003/10/31	196.91%	IMP	IMPALA PLATINUM	1998/09/30
243.58%	BRM	BEARING MAN	1995/04/30	215.78%	LAR	LA GROUP	1996/07/31	196.36%	SFN	SASFIN	2003/10/31
243.22%	GFI	GOLD FIELDS	2001/09/30	215.19%	SFN	SASFIN	2003/08/31	196.15%	MES	MESSINA	2001/01/31
242.79%	GFI	GOLD FIELDS	2001/06/30	215.03%	CPI	CAPITEC BANK	2002/06/30	195.96%	DTC	DATATEC	2003/02/28
242.65%	DAW	DS.& WHSG.NETWORK	2003/11/30	214.98%	SFN	SASFIN	2003/12/31	195.90%	IMP	IMPALA PLATINUM	1998/07/31
241.95%	OMN	OMNIA	2001/10/31	214.96%	GND	GRINDROD	2003/08/31	195.74%	DDT	DIMENSION DATA HDG.(JSE)	1995/09/30
241.74%	CRM	CERAMIC INDUSTRIES	1996/09/30	214.92%	BRM	BEARING MAN	1995/03/31	195.73%	GDF	GOLD REEF CNO.RSTS.	1998/03/31
241.28%	ADR	ADCORP	1996/08/31	214.60%	NTC	NETWORK HLTHCR.	2000/11/30	195.69%	JCM	JOHNNIC COMMS.	1999/01/31
240.95%	HCI	HOSKEN CONS.INV.	1995/01/31	214.60%	NTC	NETWORK HLTHCR.	2000/12/31	195.64%	SPG	SUPER GROUP	1996/03/31
240.58%	SPS	SPESCOM	2003/04/30	214.33%	TPC	TRANSPACO	1995/11/30	194.85%	AFR	AFGRI	2001/02/28
240.58%	MMG	MICROMEGA HDG.	2003/10/31	214.29%	SOV	SOVEREIGN FOOD INVS.	2000/06/30	194.85%	MST	MUSTEK	2000/11/30
240.11%	LAN	LA GROUP 'N'	2003/12/31	214.28%	ADR	ADCORP	1996/09/30	194.52%	PIM	PRISM	2002/12/31
240.00%	PIM	PRISM	2002/11/30	214.00%	WBO	WILSON BAY HLM OVC	2001/01/31	194.47%	JSC	JASCO ELTN.	1998/01/31
239.74%	GND	GRINDROD	2003/06/30	213.90%	BRM	BEARING MAN	1995/10/31	193.83%	BIL	BHP BILLITON (JSE)	1999/01/31
239.58%	HAR	HARMONY GOLD MNG.	2001/03/31	213.72%	DDT	DIMENSION DATA HDG.(JSE)	1995/07/31	193.27%	MTN	MTN GROUP	1999/09/30
238.73%	MMG	MICROMEGA HDG.	1999/06/30	213.20%	VLE	VALUE GROUP	2002/11/30	193.05%	RNG	RANDGOLD & EXP.	1998/12/31
238.10%	BPL	BARPLATS INVS.	1998/03/31	212.74%	IMP	IMPALA PLATINUM	1998/06/30	193.05%	NHM	NORTHAM PLATINUM	2000/05/31
238.04%	DGC	DIGICORE	2003/09/30	212.50%	KAP	KAP INTL.	2003/12/31	193.00%	BCX	BUSINESS CONNEXION GROUP	1996/03/31
237.57%	OMN	OMNIA	2001/09/30	211.70%	DAW	DS.& WHSG.NETWORK	2002/12/31	192.59%	MES	MESSINA	2003/11/30
237.49%	ADR	ADCORP	1995/07/31	211.47%	BIL	BHP BILLITON (JSE)	1998/12/31	191.99%	WBO	WILSON BAY HLM OVC	2000/08/31
237.16%	TPC	TRANSPACO	2002/07/31	211.45%	HCI	HOSKEN CONS.INV.	1999/09/30	191.83%	SAP	SAPPI	1998/08/31
237.16%	HVL	HIGHVELD STL.& VNM.	2003/11/30	211.40%	SPS	SPESCOM	2003/02/28	191.50%	ADR	ADCORP	1996/10/31
237.05%	GND	GRINDROD	2003/09/30	211.30%	DAW	DS.& WHSG.NETWORK	1995/02/28	191.50%	CRG	CARGO CARRIERS	2002/01/31
236.84%	BEL	BELL EQUIPMENT	1999/10/31	211.08%	OMN	OMNIA	2001/11/30	191.34%	WBO	WILSON BAY HLM OVC	2001/02/28
236.51%	AFR	AFGRI	2001/01/31	210.77%	ABL	AFRICAN BANK INVS.	1995/08/31	191.28%	FBR	FAMOUS BRANDS	2003/08/31
236.20%	MVL	MVELAPHANDA RES.	2000/06/30	210.64%	MRF	MERAFE RESOURCES	1997/03/31	191.24%	AMA	AMAL.APPC	2003/05/31
236.18%	CSB	CASHBUILD	2002/02/28	210.34%	RAH	REAL AFRICA	1996/05/30	191.07%	BPL	BARPLATS INVS.	2003/08/31
236.13%	VLE	VALUE GROUP	2003/02/28	210.03%	TPC	TRANSPACO	2001/09/30	191.02%	SAP	SAPPI	1999/01/31
235.50%	BCX	BUSINESS CONNEXION GROUP	1995/04/30	210.02%	TPC	TRANSPACO	2001/11/30	190.97%	ALT	ALLIED TECHNOLOGIES	1996/12/31
235.18%	CSB	CASHBUILD	2002/03/31	210.02%	DRD	DRD GOLD	2001/01/31	190.84%	DTC	DATATEC	1995/10/31
235.14%	NHM	NORTHAM PLATINUM	1998/02/28	209.92%	HAR	HARMONY GOLD MNG.	2001/06/30	190.63%	NHM	NORTHAM PLATINUM	1998/10/31
234.43%	GDH	GOOD HOPE DIAMONDS	2001/01/31	209.46%	SFN	SASFIN	2003/07/31	190.48%	MMG	MICROMEGA HDG.	2003/06/30
234.29%	ECO	EDGARS CONS.STORES	1998/11/30	209.44%	STO	SETPOINT TECH.	1999/01/31	190.43%	CRM	CERAMIC INDUSTRIES	1996/11/30
234.14%	CRM	CERAMIC INDUSTRIES	1996/10/31	209.02%	MLA	MITTAL STEEL SA.	2001/11/30	190.41%	MOB	MOBILE INDUSTRIES	2000/12/31
233.98%	DTC	DATATEC	1997/06/30	208.77%	MTN	MTN GROUP	1998/12/31	190.38%	MES	MESSINA	1998/10/31
233.69%	AFR	AFGRI	2000/04/30	208.54%	JSC	JASCO ELTN.	1997/07/31	190.25%	AFL	AFLEASE GD.& UR.RES.	2001/07/31
233.64%	GND	GRINDROD	2003/03/31	208.53%	ART	ARGENT INDUSTRIAL	2003/11/30	190.12%	TPC	TRANSPACO	2002/01/31
233.43%	WBO	WILSON BAY HLM OVC	2000/11/30	208.42%	WBO	WILSON BAY HLM OVC	1999/02/28	189.96%	CPI	CAPITEC BANK	2002/03/31
233.33%	BPL	BARPLATS INVS.	1998/05/31	208.28%	CRM	CERAMIC INDUSTRIES	1997/04/30	189.90%	SFN	SASFIN	2003/09/30
233.09%	INM	INMINS	1996/03/31	207.99%	CRM	CERAMIC INDUSTRIES	1997/01/31	189.86%	MMG	MICROMEGA HDG.	2003/07/31
232.84%	BCX	BUSINESS CONNEXION GROUP	1995/05/30	207.90%	ABL	AFRICAN BANK INVS.	1996/03/31	189.58%	INM	INMINS	1997/01/31
232.73%	BCX	BUSINESS CONNEXION GROUP	1995/05/31	207.69%	MMG	MICROMEGA HDG.	2003/11/30	189.56%	JCM	JOHNNIC COMMS.	1998/12/31
232.52%	GDH	GOOD HOPE DIAMONDS	2001/07/31	207.46%	OMN	OMNIA	2001/08/31	189.14%	MDC	MEDI CLINIC	1995/06/30
232.47%	IMP	IMPALA PLATINUM	1998/08/31	207.43%	SPG	SUPER GROUP	1996/06/30	188.89%	FRO	FRONTRANGE SLTN.	1998/02/28
231.96%	WBO	WILSON BAY HLM OVC	2000/12/31	206.94%	SPS	SPESCOM	2003/01/31	188.73%	DAW	DS.& WHSG.NETWORK	2003/08/31
231.85%	MES	MESSINA	2000/09/30	206.23%	ADR	ADCORP	1995/03/31	188.72%	AFI	AFRICAN LIFE ASR.	1996/12/31
231.01%	JSC	JASCO ELTN.	1997/03/31	206.03%	LAR	LA GROUP	1995/06/30	188.71%	DTC	DATATEC	2003/04/30
230.86%	RAH	REAL AFRICA	1996/05/31	204.75%	MES	MESSINA	2000/10/31	187.82%	AFI	AFRICAN LIFE ASR.	1997/01/31
230.56%	HVL	HIGHVELD STL.& VNM	2003/12/31	204.55%	IDI	IDION TECH.	2001/10/31	187.51%	WNH	WINHOLD	2003/09/30
230.15%	BRM	BEARING MAN	1995/06/30	204.35%	BRM	BEARING MAN	1996/01/31	187.50%	RAH	REAL AFRICA	1995/09/30
230.08%	LAR	LA GROUP	1997/05/31	204.04%	CRM	CERAMIC INDUSTRIES	1996/12/31	187.46%	AVI	AVI	1998/10/31
229.98%	GFI	GOLD FIELDS	2001/07/31	203.85%	AMA	AMAL.APPC.	2003/06/30	187.42%	ILA	ILIAD AFRICA	2002/07/31
229.87%	VLE	VALUE GROUP	2002/09/30	203.61%	KGM	KAGISO MEDIA	1997/04/30	187.33%	DAW	DS.& WHSG.NETWORK	2002/08/31
229.61%	JCM	JOHNNIC COMMS.	1999/03/31	203.46%	GND	GRINDROD	2003/10/31	187.19%	ERP	ERP.COM	2003/01/31
228.60%	TPC	TRANSPACO	2002/06/30	203.33%	PIM	PRISM	2002/09/30	186.81%	AFL	AFLEASE GD.& UR.RES.	2001/11/30
228.50%	BCX	BUSINESS CONNEXION GROUP	1996/02/29	203.02%	TPC	TRANSPACO	1995/08/31	186.67%	CSB	CASHBUILD	2002/10/31
228.16%	BRM	BEARING MAN	1995/07/31	202.94%	DDT	DIMENSION DATA HDG.(JSE)	1996/01/31	186.47%	TPC	TRANSPACO	1997/06/30
228.13%	BPL	BARPLATS INVS.	1998/10/31	202.75%	ARI	AFN.RAINBOW MRLS.	1998/12/31	186.46%	DDT	DIMENSION DATA HDG.(JSE)	1995/12/31
227.67%	MES	MESSINA	1998/11/30	202.41%	LAR	LA GROUP	2003/08/31	186.44%	CSB	CASHBUILD	2001/03/31
227.39%	ABL	AFRICAN BANK INVS.	1996/04/30	202.39%	JSC	JASCO ELTN.	2001/08/31	186.30%	CRG	CARGO CARRIERS	2001/09/30
227.21%	DDT	DIMENSION DATA HDG.(JSE)	1995/08/31	202.34%	HAR	HARMONY GOLD MNG.	2001/07/31	186.21%	BPL	BARPLATS INVS.	1999/11/30
227.12%	GDH	GOOD HOPE DIAMONDS	2003/07/31	202.33%	RNG	RANDGOLD & EXP.	2001/01/31	186.19%	DDT	DIMENSION DATA HDG.(JSE)	1995/11/30
226.99%	LAR	LA GROUP	1996/02/29	201.49%	HCI	HOSKEN CONS.INV.	2003/09/30	186.15%	SNT	SANTAM	1995/02/28
226.89%	MVE	MVELAPHANDA RES.	1999/04/30	201.32%	DGC	DIGICORE	2003/10/31	185.98%	FBR	FAMOUS BRANDS	2003/11/30
226.66%	MVL	MVELAPHANDA RES.	1998/10/31	201.14%	IMP	IMPALA PLATINUM	1999/01/31	185.71%	FRO	FRONTRANGE SLTN.	2003/08/31
226.18%	CRM	CERAMIC INDUSTRIES	1996/08/31	200.96%	MVL	MVELAPHANDA RES.	1999/01/31	185.62%	IMP	IMPALA PLATINUM	1998/05/31
225.53%	PSG	PSG GROUP	1997/02/28	200.94%	CRM	CERAMIC INDUSTRIES	1997/02/28	185.42%	SKU	SEKUNJALO INVS.	2002/09/30
224.82%	TSX	TRANS HEX GROUP	1996/03/31	200.93%	CPI	CAPITEC BANK	2003/11/30	185.21%	GNK	GRINTEK	1998/01/31
224.59%	IDI	IDION TECH.	1998/09/30	200.80%	DDT	DIMENSION DATA HDG.(JSE)	1995/06/30	184.78%	MLA	MITTAL STEEL SA.	1999/01/31
224.56%	SAP	SAPPI	1998/09/30	200.72%	AMA	AMAL.APPC.	2003/07/31	184.74%	SOV	SOVEREIGN FOOD INVS.	2003/09/30
224.03%	ADR	ADCORP	1995/04/30	200.43%	RAH	REAL AFRICA	1996/04/30	184.70%	ADR	ADCORP	1996/03/31
223.50%	DAW	DS.& WHSG.NETWORK	2003/12/31	200.34%	CSB	CASHBUILD	2002/05/31	184.68%	WBO	WILSON BAY HLM OVC	2001/03/31
223.05%	CCT	CONNECTION GP.	2003/01/31	200.30%	ART	ARGENT INDUSTRIAL	2003/12/31	184.62%	MLA	MITTAL STEEL SA.	2003/11/30
222.92%	CRM	CERAMIC INDUSTRIES	1997/03/31	200.08%	WBO	WILSON BAY HLM OVC	1998/12/31	184.60%	SPG	SUPER GROUP	1995/01/31
222.73%	IMP	IMPALA PLATINUM	1998/12/31	200.07%	MES	MESSINA	1998/08/31	184.38%	MVL	MVELAPHANDA RES.	1998/06/30
222.48%	CRG	CARGO CARRIERS	2002/04/30	200.00%	ERP	ERP.COM	2001/03/31	183.94%	RNG	RANDGOLD & EXP.	2001/05/31
222.43%	JSC	JASCO ELTN.	1997/11/30	200.00%	GDH	GOOD HOPE DIAMONDS	2000/04/30	183.83%	CSB	CASHBUILD	2002/08/31
222.42%	MTN	MTN GROUP	1999/08/30	200.00%	IDI	IDION TECH.	1999/03/31	183.61%	RAH	REAL AFRICA	1997/05/31
222.13%	GND	GRINDROD	2003/05/31	200.00%	MBN	MOBILE INDUSTRIES 'N'	2000/12/31	183.56%	WBO	WILSON BAY HLM OVC	1995/01/31

Appendix A.6. Sample Extreme Winners Sorted by Return

Continued.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
183.33%	PSG	PSG GROUP	1997/03/31	170.16%	INM	INMINS	1996/12/31	160.05%	GFI	GOLD FIELDS	2001/01/31
183.31%	AMA	AMAL.APPC.	2003/04/30	170.05%	ECO	EDGARS CONS.STORES	1996/09/30	160.05%	MES	MESSINA	1996/02/28
183.21%	DAW	DS.& WHSG.NETWORK	1995/03/31	170.03%	SCN	SCHARRIG MINING	2003/04/30	160.04%	DAW	DS.& WHSG.NETWORK	2002/10/31
183.14%	DDT	DIMENSION DATA HDG.(JSE)	1999/09/30	170.01%	ADR	ADCORP	1995/11/30	159.84%	SFN	SASFIN	2003/03/31
183.09%	RNG	RANDGOLD & EXP.	2002/01/31	169.87%	BTG	BYTES TECH.GP.	1996/09/30	159.77%	NHM	NORTHAM PLATINUM	1998/12/31
182.89%	DGC	DIGICORE	2003/06/30	169.81%	GRF	GROUP FIVE	2000/11/30	159.46%	TSX	TRANS HEX GROUP	1995/11/30
182.84%	JNC	JOHNNIC	1999/01/31	169.54%	OMN	OMNIA	2002/01/31	159.44%	SFN	SASFIN	2003/04/30
182.83%	VLE	VALUE GROUP	2002/08/31	169.45%	LAR	LA GROUP	2003/12/31	159.19%	DTC	DATATEC	1997/01/31
182.79%	TSX	TRANS HEX GROUP	1995/12/31	169.31%	CNL	CONTROL INSTRUMENTS GP.	2003/06/30	159.09%	PIM	PRISM	2003/02/28
182.73%	OMN	OMNIA	2001/07/31	169.21%	SPG	SUPER GROUP	1995/02/28	158.99%	MES	MESSINA	2000/12/31
182.54%	ABL	AFRICAN BANK INVS.	1997/11/30	169.05%	MTN	MTN GROUP	1999/08/31	158.82%	CCT	CONNECTION GP.	2003/03/31
182.05%	FBR	FAMOUS BRANDS	2003/10/31	168.72%	ADR	ADCORP	1995/10/31	158.71%	AVI	AVI	1999/01/31
182.01%	AVI	AVI	1999/05/31	168.65%	WBO	WILSON BAY HLM OVC	1995/03/31	158.54%	CPI	CAPITEC BANK	2003/10/31
181.93%	BRM	BEARING MAN	1995/09/30	168.52%	DDT	DIMENSION DATA HDG.(JSE)	1996/03/31	158.49%	TRT	TOURISM INV.	2001/11/30
181.81%	TPC	TRANSPACO	1996/12/31	168.52%	TPC	TRANSPACO	1997/01/31	158.27%	RMH	RMB	1997/02/28
181.66%	DRD	DRD GOLD	2000/12/31	168.38%	FRO	FRONTRANGE SLTN.	2003/07/31	158.09%	OMN	OMNIA	2001/04/30
181.59%	ADR	ADCORP	1996/07/31	168.20%	BJM	BARNARD JAC.MELLET	1998/08/31	158.00%	AFI	AFRICAN LIFE ASR.	1996/11/30
181.54%	BPL	BARPLATS INVS.	1999/02/28	168.14%	NPN	NASPERS	1999/03/31	158.00%	CPI	CAPITEC BANK	2003/12/31
181.39%	CPA	CORPCAPITAL	1997/05/31	168.10%	DGC	DIGICORE	2003/01/31	157.98%	WBO	WILSON BAY HLM OVC	1998/11/30
181.30%	MES	MESSINA	1998/09/30	168.09%	ERP	ERP.COM	2003/02/28	157.97%	RNG	RANDGOLD & EXP.	1995/05/31
181.24%	CNC	CONCOR	2001/04/30	168.07%	LAR	LA GROUP	1997/04/30	157.95%	MRF	MERAFE RESOURCES	1997/02/28
180.77%	SFN	SASFIN	1996/11/30	167.89%	DAW	DS.& WHSG.NETWORK	2003/06/30	157.90%	MLA	MITTAL STEEL SA.	2003/06/30
180.67%	BPL	BARPLATS INVS.	2003/10/31	167.36%	MLA	MITTAL STEEL SA.	1998/12/31	157.86%	ALT	ALLIED TECHNOLOGIES	1997/04/30
180.65%	NHM	NORTHAM PLATINUM	1999/01/31	167.26%	NWL	NU WORLD	2003/04/30	157.69%	PSG	PSG GROUP	1996/10/31
180.52%	PSG	PSG GROUP	1996/09/30	167.20%	JCM	JOHNNIC COMMS.	1999/04/30	157.68%	SPG	SUPER GROUP	1995/04/30
180.35%	DTC	DATATEC	1997/02/28	167.18%	MDC	MEDI CLINIC	1995/03/31	157.41%	MLA	MITTAL STEEL SA.	2000/10/31
180.29%	PMN	PRIMEDIA 'N'	2003/04/30	167.13%	DAW	DS.& WHSG.NETWORK	2003/04/30	157.32%	DTC	DATATEC	1996/12/31
180.16%	SFN	SASFIN	1997/03/31	167.12%	LAN	LA GROUP 'N'	2003/05/31	157.32%	DTC	DATATEC	1997/10/31
180.03%	MDC	MEDI CLINIC	1995/01/31	167.09%	DTC	DATATEC	2003/01/31	157.28%	CUL	CULLINAN	2001/08/31
180.03%	MDC	MEDI CLINIC	1995/02/28	166.90%	CPA	CORPCAPITAL	1997/06/30	157.19%	JNC	JOHNNIC	1999/05/31
179.99%	JSC	JASCO ELTN.	2001/03/31	166.76%	ALT	ALLIED TECHNOLOGIES	1996/11/30	157.14%	ERP	ERP.COM	2003/03/31
179.95%	ADR	ADCORP	1996/05/31	166.75%	INM	INMINS	1996/06/30	157.02%	KGM	KAGISO MEDIA	2003/04/30
179.90%	AFL	AFLEASE GD.& UR.RES.	1995/07/31	166.68%	LAR	LA GROUP	1996/10/31	156.96%	DTC	DATATEC	1995/05/31
179.44%	DDT	DIMENSION DATA HDG.(JSE)	1995/01/31	166.68%	AFL	AFLEASE GD.& UR.RES.	2001/12/31	156.93%	AMA	AMAL.APPC.	2003/02/28
179.17%	WNH	WINHOLD	2003/04/30	166.64%	AFI	AFRICAN LIFE ASR.	1997/02/28	156.93%	BEL	BELL EQUIPMENT	1999/03/31
179.14%	CPI	CAPITEC BANK	2002/05/31	166.50%	EXL	EXCELLERATE HDG.	1999/08/31	156.93%	WES	WESCO INVESTMENTS	2000/06/30
178.97%	FBR	FAMOUS BRANDS	2003/12/31	166.45%	JNC	JOHNNIC	1998/12/31	156.49%	INM	INMINS	1996/07/31
178.66%	GFI	GOLD FIELDS	2001/10/31	166.15%	CPI	CAPITEC BANK	2002/02/28	156.43%	INM	INMINS	2003/03/31
178.55%	MTN	MTN GROUP	1999/07/31	165.73%	AFL	AFLEASE GD.& UR.RES.	2001/06/31	156.37%	FBR	FAMOUS BRANDS	2003/06/30
178.24%	PPR	PUTCO PROPERTIES	1998/12/31	165.69%	GDH	GOOD HOPE DIAMONDS	2003/06/31	156.28%	ILA	ILIAD AFRICA	2001/09/30
177.91%	KGM	KAGISO MEDIA	1997/05/31	165.66%	JSC	JASCO ELTN.	2001/07/31	156.27%	SPG	SUPER GROUP	1996/04/30
177.48%	ERP	ERP.COM	2002/10/31	165.59%	MVL	MVELAPHANDA RES.	1998/04/30	156.03%	MDC	MEDI CLINIC	1995/08/31
177.35%	GND	GRINDROD	2003/02/28	165.56%	JSC	JASCO ELTN.	1996/02/28	155.98%	DAW	DS.& WHSG.NETWORK	2003/02/28
177.28%	RAH	REAL AFRICA	1996/03/31	165.38%	SPG	SUPER GROUP	1995/05/31	155.85%	SPS	SPESCOM	1996/05/31
177.15%	FRO	FRONTRANGE SLTN.	2003/09/30	165.27%	COM	COMAIR	1999/01/31	155.78%	HAR	HARMONY GOLD MNG.	2001/10/31
177.13%	WBO	WILSON BAY HLM OVC	2000/05/31	165.25%	MES	MESSINA	2000/04/30	155.66%	BRC	BRANDCORP	2002/02/28
177.07%	LAR	LA GROUP	1996/09/30	165.06%	DDT	DIMENSION DATA HDG.(JSE)	1995/02/28	155.28%	ADR	ADCORP	1997/04/30
176.71%	ECO	EDGARS CONS.STORES	2002/10/31	164.93%	ILA	ILIAD AFRICA	2002/03/31	155.21%	INM	INMINS	1996/08/31
176.19%	BPL	BARPLATS INVS.	1998/11/30	164.68%	JNC	JOHNNIC	1999/04/30	155.05%	ECO	EDGARS CONS.STORES	2003/11/30
176.07%	ITE	ITALTILE	1996/08/31	164.60%	INM	INMINS	1999/02/28	154.88%	STO	SETPOINT TECH.	2001/06/30
175.76%	ABL	AFRICAN BANK INVS.	1995/09/30	164.51%	ADR	ADCORP	1995/09/30	154.86%	DST	DISTELL GROUP	1999/01/31
175.47%	ECO	EDGARS CONS.STORES	2003/04/30	164.47%	NHM	NORTHAM PLATINUM	1998/09/30	154.59%	AFL	AFLEASE GD.& UR.RES.	1995/08/31
175.29%	GRF	GROUP FIVE	1999/01/31	164.41%	JNC	JOHNNIC	1999/03/31	154.57%	ADR	ADCORP	1996/11/30
175.14%	MTN	MTN GROUP	2003/03/31	164.29%	CMH	COMBINED MOTOR	1995/02/28	154.55%	BRC	BRANDCORP	1997/04/30
175.05%	AFL	AFLEASE GD.& UR.RES.	1995/11/30	164.25%	WES	WESCO INVESTMENTS	2000/07/31	154.43%	SFN	SASFIN	1996/10/31
175.02%	AFL	AFLEASE GD.& UR.RES.	2001/10/31	164.23%	CRG	CARGO CARRIERS	2002/02/28	154.37%	MST	MUSTEK	2000/12/31
174.92%	MTA	METAIR INVESTMENTS	2000/06/30	164.21%	ANG	ANGLOGOLD ASHANTI	2001/03/31	154.15%	MRF	MERAFE RESOURCES	2001/07/31
174.76%	ILA	ILIAD AFRICA	2002/06/30	164.06%	CPI	CAPITEC BANK	2003/03/31	154.14%	BAT	BRAIT SA. (JSE)	1997/06/30
174.66%	DDT	DIMENSION DATA HDG.(JSE)	1995/10/31	163.77%	DAW	DS.& WHSG.NETWORK	2002/11/30	154.08%	MVG	MVELAPHANDA GROUP	1997/07/31
174.58%	CUL	CULLINAN	2001/05/31	163.74%	ARL	ASTRAL FOODS	2003/04/30	153.86%	JSC	JASCO ELTN.	2002/02/28
174.58%	CUL	CULLINAN	2001/06/30	163.71%	RAH	REAL AFRICA	1995/11/30	153.86%	NPN	NASPERS	1996/12/31
174.53%	MPC	MR PRICE GROUP	1998/12/31	163.67%	NPN	NASPERS	1998/11/30	153.83%	SPG	SUPER GROUP	1995/03/31
174.52%	CPA	CORPCAPITAL	1997/07/31	163.64%	BPL	BARPLATS INVS.	1998/01/31	153.75%	INM	INMINS	2003/07/31
174.52%	ADR	ADCORP	1995/08/31	163.51%	TSX	TRANS HEX GROUP	2000/05/31	153.44%	CRG	CARGO CARRIERS	2001/11/30
174.20%	HCI	HOSKEN CONS.INV.	1999/01/31	163.38%	MTA	METAIR INVESTMENTS	2000/04/30	153.42%	MRF	MERAFE RESOURCES	2001/10/31
174.17%	CCT	CONNECTION GP.	2002/12/31	163.36%	DGC	DIGICORE	2003/02/28	153.27%	HCI	HOSKEN CONS.INV.	1996/03/31
174.08%	TKG	TELKOM	2003/03/31	163.26%	SPG	SUPER GROUP	1996/02/29	153.26%	DRD	DRD GOLD	2001/10/31
173.94%	DGC	DIGICORE	2003/07/31	163.22%	ELH	ELLERINE	1998/12/31	153.22%	SPG	SUPER GROUP	1997/05/31
173.68%	BRN	BRIMSTONE INV.'N'	2002/04/30	163.22%	MMG	MICROMEGA HDG.	2003/12/31	153.05%	ECO	EDGARS CONS.STORES	2002/01/31
173.41%	SFN	SASFIN	2003/06/30	163.21%	SKJ	SEKUNJALO INVS.	2002/10/31	153.03%	ERP	ERP.COM	2002/12/31
173.17%	RAH	REAL AFRICA	1996/09/30	163.16%	ABL	AFRICAN BANK INVS.	1997/12/31	152.92%	ABL	AFRICAN BANK INVS.	1997/09/30
173.08%	MVL	MVELAPHANDA RES.	1998/02/28	163.16%	NHM	NORTHAM PLATINUM	2000/04/30	152.78%	INM	INMINS	2003/05/31
172.99%	MTA	METAIR INVESTMENTS	2000/05/31	162.84%	TSX	TRANS HEX GROUP	1995/02/29	152.71%	JCM	JOHNNIC COMMS.	1999/06/30
172.94%	AFI	AFRICAN LIFE ASR.	1996/08/31	162.84%	TSX	TRANS HEX GROUP	1996/04/30	152.40%	DTC	DATATEC	1996/04/30
172.85%	ALT	ALLIED TECHNOLOGIES	1997/01/31	162.53%	MES	MESSINA	1999/01/31	152.15%	ECO	EDGARS CONS.STORES	2002/11/30
172.83%	INM	INMINS	1996/04/30	162.52%	NTC	NETWORK HLTHCR.	2000/08/31	152.00%	VLE	VALUE GROUP	2003/05/31
172.74%	PSG	PSG GROUP	1995/01/31	162.26%	DAW	DS.& WHSG.NETWORK	2003/03/31	151.81%	PIM	PRISM	2003/01/31
172.64%	MDC	MEDI CLINIC	1995/04/30	162.16%	DRD	DRD GOLD	2000/11/30	151.79%	LAN	LA GROUP 'N'	2003/11/30
172.24%	DDT	DIMENSION DATA HDG.(JSE)	1999/08/31	161.91%	AMA	AMAL.APPC.	2002/12/31	151.72%	NWL	NU WORLD	1995/03/31
172.22%	ERP	ERP.COM	2001/06/30	161.80%	ECO	EDGARS CONS.STORES	2002/12/31	151.66%	AMA	AMAL.APPC.	2003/09/30
172.22%	SAP	SAPPI	1998/12/31	161.70%	GRF	GROUP FIVE	2000/10/31	151.64%	CCT	CONNECTION GP.	2002/11/30
172.20%	FBR	FAMOUS BRANDS	2003/07/31	161.70%	TRT	TOURISM INV.	2001/10/31	151.57%	ILA	ILIAD AFRICA	2002/01/31
172.16%	DAW	DS.& WHSG.NETWORK	2003/01/31	161.68%	SFN	SASFIN	1996/06/30	151.36%	SPG	SUPER GROUP	1996/05/31
172.15%	AMA	AMAL.APPC.	2003/01/31	161.60%	AMA	AMAL.APPC.	2003/11/30	151.33%	ARL	ASTRAL FOODS	2003/03/31
172.12%	INM	INMINS	2003/04/30	161.59%	RAH	REAL AFRICA	1997/03/31	151.24%	EXL	EXCELLERATE HDG.	1999/11/30
171.97%	HCI	HOSKEN CONS.INV.	1995/08/31	161.57%	TRE	TRENCOR	2000/12/31	150.94%	MRF	MERAFE RESOURCES	1997/04/30
171.88%	CRG	CARGO CARRIERS	2002/03/31	161.30%	PHM	PHUMELELA GMG.& LEIS.	2003/03/31	150.91%	MLA	MITTAL STEEL SA.	2000/06/30
171.85%	CSB	CASHBUILD	2001/04/30	161.01%	SFN	SASFIN	2003/05/31	150.84%	DDT	DIMENSION DATA HDG.(JSE)	1996/04/30
171.81%	GDF	GOLD REEF CNCI.RSTS.	2003/02/28	160.92%	SFN	SASFIN	1997/05/31	150.78%	LAN	LA GROUP 'N'	2003/08/31
171.81%	MRF	MERAFE RESOURCES	2001/09/30	160.91%	WNH	WINHOLD	2003/07/31	150.73%	WBO	WILSON BAY HLM OVC	1995/02/28
171.80%	AFI	AFRICAN LIFE ASR.	1996/07/31	160.87%	WBO	WILSON BAY HLM OVC	1996/11/30	150.55%	DDT	DIMENSION DATA HDG.(JSE)	2003/04/30
171.49%	BEL	BELL EQUIPMENT	1998/11/30	160.65%	AFI	AFRICAN LIFE ASR.	1995/06/30	150.50%	ECO	EDGARS CONS.STORES	1999/02/28
171.29%	KGM	KAGISO MEDIA	2000/10/31	160.48%	WBO	WILSON BAY HLM OVC	1999/01/31	150.38%	TRU	TRUWORTHS INTL.	1998/09/30
171.28%	DTC	DATATEC	1996/09/30	160.27%	SBL	SABLE	1996/12/31	150.30%	AMA	AMAL.APPC.	2003/08/31
170.93%	SFN	SASFIN	1996/12/31	160.21%	DDT	DIMENSION DATA HDG (JSE)	1995/05/31	150.20%	MTA	METAIR INVESTMENTS	1995/01/31
170.53%	BRM	BEARING MAN	1995/05/31	160.16%	SFN	SASFIN	1996/09/30	150.07%	UCS	UCS GROUP	1998/10/31
170.49%	PIM	PRISM	2003/03/31	160.15%	HAR	HARMONY GOLD MNG.	2001/01/31	150.03%	JSC	JASCO ELTN.	2001/02/28
170.41%	MTA	METAIR INVESTMENTS	2000/03/31	160.06%	RAH	REAL AFRICA	1997/04/30	150.00%	BRN	BRIMSTONE INV.'N'	2002/11/30

Appendix A.6. Sample Extreme Winners Sorted by Return

Continued.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
150.00%	MUR	MURRAY & ROBERTS	2000/11/30	143.09%	DTC	DATATEC	1997/05/31	137.27%	CCT	CONNECTION GP.	2003/05/31
150.00%	ABL	AFRICAN BANK INVS.	1996/02/29	143.06%	CPA	CORPCAPITAL	1997/07/31	137.24%	HWN	HOWDEN AFRICA	2003/10/31
149.99%	SPG	SUPER GROUP	1995/06/30	143.00%	AMA	AMAL.APPC.	2002/01/31	137.23%	ART	ARGENT INDUSTRIAL	1999/01/31
149.98%	AFL	AFLEASE GD.& UR.RES.	2001/02/28	142.98%	MLA	MITTAL STEEL SA.	2003/04/30	137.22%	AFL	AFLEASE GD.& UR.RES.	2001/03/31
149.96%	OMN	OMNIA	2001/02/28	142.92%	SOL	SASOL	1998/12/31	137.21%	NTC	NETWORK HLTHCR.	2000/07/31
149.91%	CMH	COMBINED MOTOR	1995/03/31	142.84%	BRC	BRANDCORP	2003/01/31	137.18%	DTC	DATATEC	1996/06/30
149.90%	DCT	DATACENTRIX	1998/10/31	142.82%	BRM	BEARING MAN	2001/09/30	137.03%	NWL	NU WORLD	2003/03/31
149.87%	MVL	MVELAPHANDA RES.	1998/09/30	142.81%	GDF	GOLD REEF CNO.RSTS.	2003/04/30	137.02%	PHM	PHUMELELA GMG.& LEIS.	2003/05/31
149.33%	SPG	SUPER GROUP	1995/10/31	142.79%	NWL	NU WORLD	1995/01/31	136.98%	TSX	TRANS HEX GROUP	1996/12/31
149.33%	ADR	ADCORP	1996/04/30	142.78%	BEL	BELL EQUIPMENT	1998/09/30	136.80%	LAR	LA GROUP	1997/06/30
149.17%	DDT	DIMENSION DATA HDG.(JSE)	1995/04/30	142.71%	MLA	MITTAL STEEL SA.	2003/08/31	136.68%	DDT	DIMENSION DATA HDG.(JSE)	1999/02/28
149.15%	CUL	CULLINAN	2001/03/31	142.45%	ADH	ADVTECH	2003/02/28	136.67%	AMS	ANGLO AMERICAN PLAT.	2000/04/30
149.15%	CUL	CULLINAN	2001/04/30	142.39%	CNL	CONTROL INSTRUMENTS GP.	2003/07/31	136.62%	BPL	BARPLATS INVS.	1999/03/31
149.05%	MVL	MVELAPHANDA RES.	1998/03/31	142.39%	DRD	DRD GOLD	2001/11/30	136.59%	EXL	EXCELLERATE HDG.	1999/02/28
149.01%	SPS	SPESCOM	2002/09/30	142.35%	SOL	SASOL	1999/01/31	136.57%	ILA	ILIAD AFRICA	2002/08/31
149.00%	SNT	SANTAM	1995/01/31	142.34%	AFI	AFRICAN LIFE ASR.	1997/04/30	136.50%	ITE	ITALTILE	1996/09/30
149.00%	BIL	BHP BILLITON (JSE)	1998/11/30	142.25%	EXL	EXCELLERATE HDG.	2003/11/30	136.50%	ITE	ITALTILE	1997/01/31
148.94%	SFN	SASFIN	2003/11/30	142.14%	HCI	HOSKEN CONS.INV.	1999/02/28	136.48%	FRO	FRONTRANGE SLTN.	1998/03/31
148.92%	MLA	MITTAL STEEL SA.	2002/01/31	141.97%	SAP	SAPPI	1999/02/28	136.47%	TPC	TRANSPACO	2002/02/28
148.89%	MDC	MEDI CLINIC	1995/07/31	141.89%	ADH	ADVTECH	2003/03/31	136.43%	FSR	FIRSTRAND	1996/03/31
148.83%	FRO	FRONTRANGE SLTN.	2003/10/31	141.89%	RBW	RAINBOW CHICKEN	2000/05/31	136.42%	GDF	GOLD REEF CNO.RSTS.	2003/05/31
148.78%	GDH	GOOD HOPE DIAMONDS	2000/10/31	141.86%	PSG	PSG GROUP	1996/12/31	136.42%	CUL	CULLINAN	2002/06/30
148.78%	GDH	GOOD HOPE DIAMONDS	2000/11/30	141.66%	DTC	DATATEC	1996/08/31	136.38%	HCI	HOSKEN CONS.INV.	1996/02/29
148.78%	GDH	GOOD HOPE DIAMONDS	2000/12/31	141.66%	BAT	BRAIT SA. (JSE)	1997/05/31	136.36%	DDT	DIMENSION DATA HDG.(JSE)	1996/02/29
148.74%	DDT	DIMENSION DATA HDG.(JSE)	1999/07/31	141.66%	BAT	BRAIT SA. (JSE)	1997/07/31	136.35%	GND	GRINDROD	2003/01/31
148.69%	WES	WESCO INVESTMENTS	2000/05/31	141.61%	DAW	DS.& WHSG.NETWORK	1997/12/31	136.32%	MTA	METAIR INVESTMENTS	2001/11/30
148.68%	PAM	PALABORA MINING	1998/09/30	141.58%	DGC	DIGICORE	2003/08/31	136.27%	CMH	COMBINED MOTOR	1995/04/30
148.65%	ABL	AFRICAN BANK INVS.	1995/12/31	141.54%	SAP	SAPPI	2001/02/28	136.22%	MTA	METAIR INVESTMENTS	2000/08/31
148.62%	CPI	CAPITEC BANK	2003/09/30	141.45%	RNG	RANDGOLD & EXP.	1995/10/31	136.11%	ELH	ELLERINE	1999/01/31
148.39%	CRG	CARGO CARRIERS	2001/10/31	141.42%	CPA	CORPCAPITAL	2002/09/30	136.11%	MES	MESSINA	2001/12/31
148.31%	GND	GRINDROD	2000/03/31	141.38%	MTL	MERCANTILE BANK	2003/01/31	136.10%	APK	ASTRAPAK	2000/12/31
148.26%	DTC	DATATEC	1996/02/29	141.37%	ECO	EDGARS CONS STORES	1996/10/31	136.09%	CSB	CASHBUILD	2002/01/31
148.23%	DTC	DATATEC	1996/07/31	141.24%	AMS	ANGLO AMERICAN PLAT.	1998/12/31	135.88%	CCT	CONNECTION GP.	2003/07/31
148.10%	MES	MESSINA	2001/11/30	141.19%	LON	LONMIN (JSE)	1998/07/31	135.70%	CSB	CASHBUILD	2001/05/31
148.03%	SFN	SASFIN	2003/02/28	141.19%	CSB	CASHBUILD	2002/12/31	135.69%	EXL	EXCELLERATE HDG.	1999/09/30
148.00%	RBW	RAINBOW CHICKEN	2000/06/30	141.05%	WNH	WINHOLD	2001/09/30	135.55%	CSB	CASHBUILD	2002/11/30
147.66%	SPG	SUPER GROUP	1995/11/30	140.68%	MBN	MOBILE INDUSTRIES 'N'	2000/07/31	135.52%	ARI	AFN.RAINBOW MRLS.	1999/01/31
147.66%	INM	INMINS	2003/01/31	140.60%	PSG	PSG GROUP	1996/02/29	135.40%	DDT	DIMENSION DATA HDG.(JSE)	1997/04/30
147.62%	BPL	BARPLATS INVS.	1997/09/30	140.60%	JCM	JOHNNIC COMMS.	1999/05/31	135.30%	IMP	IMPALA PLATINUM	1998/02/28
147.60%	ABL	AFRICAN BANK INVS.	2003/03/31	140.52%	FBR	FAMOUS BRANDS	2003/05/31	135.25%	GFI	GOLD FIELDS	2000/12/31
147.58%	TIW	TIGER WHEELS	1995/08/31	140.50%	SAP	SAPPI	2001/03/31	135.22%	AMA	AMAL.APPC.	2002/10/31
147.57%	APK	ASTRAPAK	2000/10/31	140.43%	DTC	DATATEC	1998/10/31	135.20%	PHM	PHUMELELA GMG.& LEIS.	2003/12/31
147.50%	BIL	BHP BILLITON (JSE)	1998/08/31	140.43%	TKG	TELKOM	2003/05/31	135.06%	BPL	BARPLATS INVS.	1999/04/30
147.49%	ITE	ITALTILE	1996/11/30	140.29%	AFI	AFRICAN LIFE ASR.	1996/09/30	134.97%	OMN	OMNIA	2002/04/30
147.48%	OMN	OMNIA	2001/12/31	140.19%	GDF	GOLD REEF CNO.RSTS.	2003/03/31	134.95%	SFN	SASFIN	1997/02/28
147.45%	DGC	DIGICORE	2003/04/30	140.14%	IVT	INVICTA	1996/07/31	134.94%	FSR	FIRSTRAND	1996/07/31
147.40%	AFI	AFRICAN LIFE ASR.	1997/03/31	140.12%	LAN	LA GROUP 'N'	2003/07/31	134.89%	INM	INMINS	1995/08/31
147.39%	DGC	DIGICORE	2002/12/31	140.11%	BEL	BELL EQUIPMENT	1998/10/31	134.88%	HCI	HOSKEN CONS.INV.	1996/05/31
147.33%	TIW	TIGER WHEELS	1995/09/30	140.05%	MOB	MOBILE INDUSTRIES	2000/07/31	134.87%	JNC	JOHNNIC	1999/08/31
147.25%	ECO	EDGARS CONS.STORES	2002/09/30	140.04%	AFL	AFLEASE GD.& UR.RES.	1995/09/30	134.86%	AFI	AFRICAN LIFE ASR.	1996/10/31
146.92%	DAW	DS.& WHSG.NETWORK	1995/04/30	140.02%	TRE	TRENCOR	2000/07/31	134.80%	BRM	BEARING MAN	1999/01/31
146.69%	CCT	CONNECTION GP.	2003/04/30	140.01%	PSG	PSG GROUP	1995/11/30	134.76%	INM	INMINS	2002/11/30
146.59%	DTC	DATATEC	1996/11/30	140.00%	FRO	FRONTRANGE SLTN.	2003/06/30	134.73%	VLE	VALUE GROUP	2002/03/31
146.57%	KGM	KAGISO MEDIA	2003/02/28	140.00%	ELH	ELLERINE	1998/11/30	134.66%	TRE	TRENCOR	2001/01/31
146.57%	MES	MESSINA	2001/09/30	139.99%	RNG	RANDGOLD & EXP.	1995/01/31	134.65%	ECO	EDGARS CONS.STORES	2003/02/28
146.30%	CUL	CULLINAN	2002/05/31	139.98%	TPC	TRANSPACO	1995/10/31	134.63%	AMS	ANGLO AMERICAN PLAT.	2000/05/31
146.21%	PSG	PSG GROUP	2003/12/31	139.97%	SPG	SUPER GROUP	1996/07/31	134.48%	DAW	DS.& WHSG.NETWORK	1995/01/31
145.97%	CSB	CASHBUILD	2001/12/31	139.95%	FRO	FRONTRANGE SLTN.	2003/11/30	134.37%	MES	MESSINA	2001/10/31
145.85%	TSX	TRANS HEX GROUP	1996/05/31	139.92%	JCM	JOHNNIC COMMS.	1999/09/30	134.32%	LON	LONMIN (JSE)	1998/08/31
145.84%	AFL	AFLEASE GD.& UR.RES.	2001/09/30	139.80%	MTN	MTN GROUP	2002/09/30	134.29%	MOB	MOBILE INDUSTRIES	2001/04/30
145.51%	HVL	HIGHVELD STL.& VNM.	2003/10/31	139.51%	JNC	JOHNNIC	1999/09/30	134.27%	OMN	OMNIA	2002/02/28
145.46%	DDT	DIMENSION DATA HDG.(JSE)	1995/03/31	139.49%	TSX	TRANS HEX GROUP	2001/10/31	134.07%	ADH	ADVTECH	2003/01/31
145.42%	ECO	EDGARS CONS.STORES	2003/12/31	139.49%	HAR	HARMONY GOLD MNG.	1997/11/30	134.04%	MVG	MVELAPHANDA GROUP	1997/05/31
145.38%	ART	ARGENT INDUSTRIAL	1999/02/28	139.36%	DDT	DIMENSION DATA HDG.(JSE)	1996/06/30	134.00%	ECO	EDGARS CONS.STORES	2002/07/31
145.24%	SCN	SCHARRIG MINING	2003/11/30	139.36%	MLA	MITTAL STEEL SA.	2003/10/31	133.97%	NWL	NU WORLD	1995/04/30
145.22%	HCI	HOSKEN CONS.INV.	1995/07/31	139.24%	AFI	AFRICAN LIFE ASR.	1995/09/30	133.90%	ERP	ERP.COM	2003/04/30
145.14%	SCN	SCHARRIG MINING	2003/05/31	139.19%	CUL	CULLINAN	2001/07/31	133.90%	CUL	CULLINAN	2002/07/31
145.00%	ERP	ERP.COM	2001/09/30	139.09%	MLA	MITTAL STEEL SA.	2003/07/31	133.70%	CPI	CAPITEC BANK	2003/02/28
145.00%	WNH	WINHOLD	1996/09/30	139.05%	MVL	MVELAPHANDA RES.	1998/07/31	133.61%	MVL	MVELAPHANDA RES.	1998/05/31
144.87%	SFN	SASFIN	1995/09/30	138.97%	GRF	GROUP FIVE	1999/02/28	133.59%	GNK	GRINTEK	1997/12/31
144.81%	ABL	AFRICAN BANK INVS.	1995/11/30	138.80%	MRF	MERAFE RESOURCES	2001/06/30	133.48%	MLA	MITTAL STEEL SA.	2003/09/30
144.74%	GDH	GOOD HOPE DIAMONDS	2003/04/30	138.74%	MRF	MERAFE RESOURCES	2001/08/31	133.42%	FSR	FIRSTRAND	1997/01/31
144.74%	GDH	GOOD HOPE DIAMONDS	2003/05/31	138.72%	ERP	ERP.COM	2002/06/30	133.41%	SFN	SASFIN	1997/01/31
144.74%	GDH	GOOD HOPE DIAMONDS	2003/06/30	138.68%	SOV	SOVEREIGN FOOD INVS.	2000/10/31	133.39%	ECO	EDGARS CONS.STORES	2002/02/28
144.68%	PMA	PRIMEDIA	1996/04/30	138.64%	GDF	GOLD REEF CNO.RSTS.	1998/08/31	133.33%	BPL	BARPLATS INVS.	1997/12/31
144.61%	AGL	ANGLO AMERICAN (JSE)	1998/12/31	138.58%	AFL	AFLEASE GD.& UR.RES.	2001/01/31	133.33%	FSR	FIRSTRAND	1995/09/30
144.58%	CPA	CORPCAPITAL	1995/10/31	138.55%	MTN	MTN GROUP	1999/10/31	133.31%	MTN	MTN GROUP	2003/02/28
144.56%	IDI	IDION TECH.	2002/03/31	138.53%	ILA	ILIAD AFRICA	2001/11/30	133.23%	FSR	FIRSTRAND	1997/02/28
144.51%	VLE	VALUE GROUP	2002/07/31	138.52%	FOS	FOSCHINI	1998/12/31	133.17%	SOV	SOVEREIGN FOOD INVS.	2003/08/31
144.44%	AFL	AFLEASE GD.& UR.RES.	1995/12/31	138.50%	MTN	MTN GROUP	2003/04/30	133.16%	BTG	BYTES TECH.GP.	1996/10/31
144.43%	TPC	TRANSPACO	1995/09/30	138.40%	CSB	CASHBUILD	2001/11/30	132.94%	CCT	CONNECTION GP.	2003/06/30
144.42%	ITE	ITALTILE	1996/12/31	138.31%	PMA	PRIMEDIA	1996/05/31	132.88%	AVI	AVI	1999/03/31
144.26%	WBO	WILSON BAY HLM OVC	1996/08/31	138.13%	MLA	MITTAL STEEL SA.	2003/03/31	132.82%	MVG	MVELAPHANDA GROUP	1997/04/30
144.03%	JNC	JOHNNIC	1999/06/30	138.12%	ILA	ILIAD AFRICA	2002/05/31	132.80%	NTC	NETWORK HLTHCR.	2000/09/30
144.03%	OMN	OMNIA	2002/05/31	138.10%	WNH	WINHOLD	1996/10/31	132.63%	RLO	REUNERT	1999/08/31
143.90%	INM	INMINS	1996/10/31	138.05%	INM	INMINS	1996/09/30	132.63%	VLE	VALUE GROUP	2002/12/31
143.83%	DAW	DS.& WHSG.NETWORK	2003/05/31	137.98%	ADR	ADCORP	1995/02/28	132.61%	SCN	SCHARRIG MINING	2000/04/30
143.71%	CCT	CONNECTION GP.	2003/02/28	137.90%	PSG	PSG GROUP	1997/01/31	132.58%	UCS	UCS GROUP	2002/12/31
143.68%	COM	COMAIR	1999/02/28	137.80%	BRC	BRANDCORP	2003/09/30	132.57%	SFN	SASFIN	1995/02/28
143.55%	MUR	MURRAY & ROBERTS	2000/10/31	137.79%	ECO	EDGARS CONS.STORES	1996/08/31	132.54%	RAH	REAL AFRICA	1997/07/31
143.55%	WNH	WINHOLD	2003/06/30	137.75%	AVI	AVI	1996/09/30	132.49%	KGM	KAGISO MEDIA	2003/01/31
143.54%	AFE	AECI	1999/01/31	137.62%	SKJ	SEKUNJALO INVS	2002/01/31	132.48%	AFI	AFRICAN LIFE ASR.	1997/05/31
143.47%	WNH	WINHOLD	2002/11/30	137.62%	SKJ	SEKUNJALO INVS.	2002/07/31	132.38%	KGM	KAGISO MEDIA	2003/11/30
143.44%	AVI	AVI	1999/04/30	137.60%	SUR	SPUR	2000/05/31	132.35%	NHM	NORTHAM PLATINUM	1999/08/31
143.43%	DGC	DIGICORE	2003/05/31	137.58%	SKJ	SEKUNJALO INVS.	2003/03/31	132.32%	CMH	COMBINED MOTOR	2003/12/31
143.15%	TKG	TELKOM	2003/04/30	137.43%	FSR	FIRSTRAND	1996/06/30	132.27%	GRF	GROUP FIVE	1998/11/30
143.11%	CSB	CASHBUILD	2002/09/30	137.38%	INM	INMINS	2002/10/31	132.27%	CNC	CONCOR	1995/02/28
143.11%	FBR	FAMOUS BRANDS	2003/03/31	137.31%	NHM	NORTHAM PLATINUM	1996/04/30	132.23%	MTN	MTN GROUP	2002/12/31

Appendix A.6. Sample Extreme Winners Sorted by Return

Continued.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
132.16%	RMH	RMB	1996/07/31	127.05%	TRT	TOURISM INV.	2000/06/30	122.38%	TRT	TOURISM INV.	2001/12/31
132.15%	DDT	DIMENSION DATA HDG.(JSE)	1997/05/31	127.05%	RMH	RMB	1996/04/30	122.31%	SBL	SABLE	1999/03/31
132.14%	DDT	DIMENSION DATA HDG.(JSE)	1996/05/31	127.04%	APK	ASTRAPAK	2000/09/30	122.30%	GNK	GRINTEK	1997/06/30
132.10%	DRD	DRD GOLD	1997/12/31	127.02%	KGM	KAGISO MEDIA	2001/04/30	122.22%	ERP	ERP.COM	2001/05/31
131.99%	BRC	BRANDCORP	2001/12/31	127.00%	PMN	PRIMEDIA 'N'	2003/06/30	122.22%	ERP	ERP.COM	2001/07/31
131.97%	SCN	SCHARRIG MINING	2000/10/31	126.99%	CPI	CAPITEC BANK	2003/01/31	122.22%	CNC	CONCOR	2001/05/31
131.86%	MLA	MITTAL STEEL SA.	2003/12/31	126.97%	CRG	CARGO CARRIERS	2001/07/31	122.18%	WES	WESCO INVESTMENTS	1998/12/31
131.82%	RBW	RAINBOW CHICKEN	2000/02/29	126.96%	SAP	SAPPI	2001/01/31	122.16%	SUR	SPUR	2000/07/31
131.79%	BEL	BELL EQUIPMENT	1998/08/31	126.93%	BEL	BELL EQUIPMENT	1999/02/28	122.14%	IMP	IMPALA PLATINUM	1999/03/31
131.79%	BTG	BYTES TECH.GP.	1996/11/30	126.86%	SAP	SAPPI	2000/11/30	122.14%	AVI	AVI	1999/02/28
131.77%	MLA	MITTAL STEEL SA.	2003/05/31	126.84%	LAR	LA GROUP	1997/02/28	122.12%	KGM	KAGISO MEDIA	2001/09/30
131.76%	CSB	CASHBUILD	2001/02/28	126.83%	JCM	JOHNNIC COMMS.	1995/02/28	122.11%	TIW	TIGER WHEELS	1995/10/31
131.69%	JCM	JOHNNIC COMMS.	1995/03/31	126.79%	GND	GRINDROD	2000/05/31	122.06%	MOB	MOBILE INDUSTRIES	2001/01/31
131.62%	CNL	CONTROL INSTRUMENTS GP.	1995/06/30	126.79%	PMN	PRIMEDIA 'N'	2003/03/31	121.99%	KGM	KAGISO MEDIA	2001/08/31
131.45%	NTC	NETWORK HLTHCR.	2000/06/30	126.77%	NCL	NEW CLICKS HDG.	1998/12/31	121.96%	CSB	CASHBUILD	2000/09/30
131.44%	TRT	TOURISM INV.	2002/02/28	126.77%	GFI	GOLD FIELDS	2000/11/30	121.93%	FBR	FAMOUS BRANDS	1999/02/28
131.43%	KGM	KAGISO MEDIA	1997/03/31	126.71%	LAR	LA GROUP	2003/10/31	121.89%	ECO	EDGARS CONS.STORES	2003/09/30
131.32%	ECO	EDGARS CONS.STORES	2002/08/31	126.67%	DLV	DORBYL	1995/01/31	121.87%	RNG	RANDGOLD & EXP.	2001/11/30
131.22%	RNG	RANDGOLD & EXP.	1995/09/30	126.63%	RNG	RANDGOLD & EXP.	2001/12/31	121.86%	RMH	RMB	1996/08/31
131.20%	ABL	AFRICAN BANK INVS.	2003/04/30	126.62%	INM	INMINS	2003/08/31	121.83%	ANG	ANGLOGOLD ASHANTI	2001/05/31
131.20%	WES	WESCO INVESTMENTS	2000/09/30	126.57%	SPS	SPESCOM	2002/12/31	121.81%	SAP	SAPPI	2000/12/31
131.15%	DLV	DORBYL	1999/02/28	126.55%	LAN	LA GROUP 'N'	2003/09/30	121.74%	SFN	SASFIN	1996/05/31
131.07%	GDF	GOLD REEF CNO.RSTS.	2003/11/30	126.38%	COM	COMAIR	1998/11/30	121.68%	SPS	SPESCOM	1996/08/31
131.06%	RAH	REAL AFRICA	1997/06/30	126.27%	ABL	AFRICAN BANK INVS.	2003/05/31	121.67%	KGM	KAGISO MEDIA	2003/03/31
131.05%	AFI	AFRICAN LIFE ASR.	1996/05/31	126.25%	DDT	DIMENSION DATA HDG.(JSE)	1996/07/31	121.54%	LAR	LA GROUP	2003/09/30
130.76%	LAR	LA GROUP	2003/07/31	126.24%	JNC	JOHNNIC	1999/07/31	121.50%	MMG	MICROMEGA HDG.	1996/12/31
130.73%	RAH	REAL AFRICA	1996/02/29	126.23%	ECO	EDGARS CONS.STORES	2003/05/31	121.46%	DSY	DISCOVERY	2003/04/30
130.50%	MRF	MERAFE RESOURCES	2001/05/31	126.23%	BRC	BRANDCORP	2002/03/31	121.43%	SOV	SOVEREIGN FOOD INVS.	2000/02/29
130.47%	GRF	GROUP FIVE	2000/12/31	126.21%	DAW	DS.& WHSG.NETWORK	2002/09/30	121.43%	SOV	SOVEREIGN FOOD INVS.	2000/05/31
130.39%	DLV	DORBYL	1998/12/31	126.20%	ECO	EDGARS CONS.STORES	1999/03/31	121.38%	CPA	CORPCAPITAL	1996/04/30
130.34%	EOH	ENTER.OUTSC.	2003/11/30	126.13%	ABL	AFRICAN BANK INVS.	2003/06/30	121.34%	ADH	ADVTECH	2003/04/30
130.33%	JSC	JASCO ELTN.	2002/01/31	126.10%	DGC	DIGICORE	2003/03/31	121.33%	GDF	GOLD REEF CNO.RSTS.	2003/06/30
130.14%	MPC	MR PRICE GROUP	1999/01/31	126.01%	BEL	BELL EQUIPMENT	1998/07/31	121.30%	DTC	DATATEC	1996/03/31
130.11%	APK	ASTRAPAK	2000/11/30	125.97%	EXL	EXCELLERATE HDG.	2003/12/31	121.27%	PPR	PUTCO PROPERTIES	1999/01/31
130.04%	HAR	HARMONY GOLD MNG.	2000/12/31	125.94%	LAN	LA GROUP 'N'	2003/04/30	121.25%	SNT	SANTAM	1995/04/30
130.03%	DST	DISTELL GROUP	1998/12/31	125.91%	MTA	METAIR INVESTMENTS	2001/12/31	121.23%	GRF	GROUP FIVE	2003/06/30
130.02%	AFL	AFLEASE GD.& UR.RES.	1999/02/28	125.84%	SHP	SHOPRITE	1997/02/28	121.15%	BPL	BARPLATS INVS.	1998/09/30
129.98%	NPN	NASPERS	2003/03/31	125.82%	NHM	NORTHAM PLATINUM	2000/02/29	121.11%	ILA	ILIAD AFRICA	2000/11/30
129.96%	SPS	SPESCOM	1997/07/31	125.81%	TPC	TRANSPACO	2002/11/30	121.06%	TPC	TRANSPACO	2002/12/31
129.95%	ALT	ALLIED TECHNOLOGIES	1997/02/28	125.80%	RNG	RANDGOLD & EXP.	2001/02/28	121.05%	ARI	AFN.RAINBOW MRLS.	1998/11/30
129.91%	VLE	VALUE GROUP	2003/06/30	125.73%	CSB	CASHBUILD	2001/09/30	121.01%	AMS	ANGLO AMERICAN PLAT.	1999/01/31
129.88%	CPI	CAPITEC BANK	2002/08/31	125.64%	OMN	OMNIA	2001/05/31	120.97%	SAP	SAPPI	1996/11/30
129.88%	CPI	CAPITEC BANK	2002/09/30	125.63%	LON	LONMIN (JSE)	2001/03/31	120.96%	BPL	BARPLATS INVS.	1999/10/31
129.87%	DAW	DS.& WHSG.NETWORK	1997/07/31	125.60%	WES	WESCO INVESTMENTS	2000/08/31	120.91%	INM	INMINS	2002/12/31
129.87%	ADR	ADCORP	1996/06/30	125.45%	NHM	NORTHAM PLATINUM	1998/03/31	120.91%	PHM	PHUMELELA GMG & LEIS.	2003/02/28
129.86%	INM	INMINS	1995/07/31	125.43%	SOL	SASOL	2000/12/31	120.90%	NTC	NETWORK HLTHCR.	2001/01/31
129.86%	INM	INMINS	1996/02/29	125.32%	GND	GRINDROD	2001/02/28	120.86%	HDC	HUDACO	1999/02/28
129.73%	SPG	SUPER GROUP	1995/12/31	125.31%	LAN	LA GROUP 'N'	2003/10/31	120.86%	JSC	JASCO ELTN.	1997/10/31
129.72%	FRO	FRONTRANGE SLTN.	2001/10/31	125.29%	MBN	MOBILE INDUSTRIES 'N'	2001/01/31	120.85%	UCS	UCS GROUP	2003/05/31
129.71%	EOH	ENTER.OUTSC.	2003/05/31	125.25%	IMP	IMPALA PLATINUM	2001/03/31	120.84%	DDT	DIMENSION DATA HDG.(JSE)	1999/10/31
129.69%	ILA	ILIAD AFRICA	2002/12/31	125.23%	ITE	ITALTILE	1996/10/31	120.78%	BIL	BHP BILLITON (JSE)	2000/12/31
129.67%	BRC	BRANDCORP	2001/11/30	125.22%	MUR	MURRAY & ROBERTS	2000/06/30	120.75%	HWN	HOWDEN AFRICA	2003/08/31
129.66%	WNH	WINHOLD	2003/05/31	125.12%	DDT	DIMENSION DATA HDG.(JSE)	2003/03/31	120.70%	DAW	DS.& WHSG.NETWORK	2002/02/28
129.61%	MES	MESSINA	2002/01/31	125.01%	MES	MESSINA	2001/03/31	120.69%	MUR	MURRAY & ROBERTS	2000/07/31
129.52%	SBL	SABLE	2003/12/31	124.96%	JCM	JOHNNIC COMMS.	1995/07/31	120.66%	HCI	HOSKEN CONS.INV.	1999/08/31
129.49%	GDF	GOLD REEF CNO.RSTS.	2002/12/31	124.83%	BPL	BARPLATS INVS.	2003/09/30	120.43%	SUR	SPUR	2000/09/30
129.48%	AFE	AECI	1999/02/28	124.82%	PAM	PALABORA MINING	1998/07/31	120.42%	WBO	WILSON BAY HLM OVC	2000/04/30
129.41%	PSG	PSG GROUP	1997/04/30	124.69%	DRD	DRD GOLD	1997/11/30	120.37%	PMA	PRIMEDIA	2003/09/30
129.38%	RAH	REAL AFRICA	1996/01/31	124.68%	VLE	VALUE GROUP	2002/02/28	120.35%	WNH	WINHOLD	2003/12/31
129.31%	RNG	RANDGOLD & EXP.	1995/08/31	124.54%	LAR	LA GROUP	1997/03/31	120.33%	RNG	RANDGOLD & EXP.	1995/11/30
129.24%	BRC	BRANDCORP	2003/04/30	124.40%	TRE	TRENCOR	2000/11/30	120.29%	SOL	SASOL	1998/11/30
129.15%	GDF	GOLD REEF CNO.RSTS.	2003/01/31	124.26%	RNG	RANDGOLD & EXP.	1995/07/31	120.26%	MVG	MVELAPHANDA GROUP	1997/06/30
129.10%	WNH	WINHOLD	2003/02/28	124.19%	RNG	RANDGOLD & EXP.	2001/03/31	120.26%	CPL	CAPITAL PROPERTY FD.	1998/09/30
129.03%	AMA	AMAL.APPC.	2003/12/31	124.16%	PMA	PRIMEDIA	2003/06/30	120.19%	NPN	NASPERS	1999/04/30
129.03%	CSB	CASHBUILD	1999/03/31	124.14%	CPL	CAPITAL PROPERTY FD.	1998/10/31	120.18%	CLH	CITY LODGE HOTELS	1998/09/30
128.95%	BRM	BEARING MAN	2000/05/31	124.09%	CRG	CARGO CARRIERS	2001/06/31	120.17%	ART	ARGENT INDUSTRIAL	2003/10/31
128.90%	RMH	RMB	1996/06/30	123.87%	ANG	ANGLOGOLD ASHANTI	2001/01/31	120.17%	WES	WESCO INVESTMENTS	2000/12/31
128.89%	TRT	TOURISM INV.	2002/01/31	123.83%	GRF	GROUP FIVE	1998/12/31	120.17%	FBR	FAMOUS BRANDS	2003/04/30
128.87%	CPA	CORPCAPITAL	2002/08/31	123.77%	JCM	JOHNNIC COMMS.	1995/04/30	120.06%	PHM	PHUMELELA GMG.& LEIS.	2002/10/31
128.81%	PMN	PRIMEDIA 'N'	2003/05/31	123.75%	DDT	DIMENSION DATA HDG.(JSE)	1997/03/31	120.05%	UCS	UCS GROUP	2003/04/30
128.80%	RNG	RANDGOLD & EXP.	1996/02/29	123.69%	CNL	CONTROL INSTRUMENTS GP.	2002/02/28	120.00%	ERP	ERP.COM	2002/07/31
128.69%	FSR	FIRSTRAND	1996/05/31	123.67%	KGM	KAGISO MEDIA	2000/12/31	120.00%	HDC	HUDACO	1999/01/31
128.63%	NTC	NETWORK HLTHCR.	2001/02/28	123.66%	NHM	NORTHAM PLATINUM	1999/10/31	120.00%	MTA	METAIR INVESTMENTS	2000/01/31
128.58%	CNL	CONTROL INSTRUMENTS GP.	1995/02/28	123.55%	MMG	MICROMEGA HDG.	1999/04/30	120.00%	MTA	METAIR INVESTMENTS	2000/02/29
128.58%	MES	MESSINA	2001/02/28	123.54%	MTA	METAIR INVESTMENTS	1995/02/28	119.99%	RAH	REAL AFRICA	1997/02/28
128.50%	HAR	HARMONY GOLD MNG.	1997/12/31	123.53%	MST	MUSTEK	2001/02/28	119.98%	DCT	DATACENTRIX	1998/11/30
128.48%	ARL	ASTRAL FOODS	2003/12/31	123.53%	SHP	SHOPRITE	1997/04/30	119.97%	MES	MESSINA	1999/03/31
128.46%	KGM	KAGISO MEDIA	2003/12/31	123.45%	ANG	ANGLOGOLD ASHANTI	2001/02/28	119.92%	AFI	AFRICAN LIFE ASR.	1995/04/30
128.30%	AMA	AMAL.APPC.	2003/10/31	123.40%	OMN	OMNIA	2002/06/30	119.92%	LON	LONMIN (JSE)	1998/06/30
128.12%	MUR	MURRAY & ROBERTS	2000/12/31	123.20%	CNL	CONTROL INSTRUMENTS GP.	1995/03/31	119.91%	EOH	ENTER.OUTSC.	2003/12/31
128.06%	ALT	ALLIED TECHNOLOGIES	1997/03/31	123.10%	MTN	MTN GROUP	2002/10/31	119.81%	ART	ARGENT INDUSTRIAL	2002/01/31
128.06%	ART	ARGENT INDUSTRIAL	2001/12/31	123.08%	TSX	TRANS HEX GROUP	1998/08/31	119.81%	AVI	AVI	1999/06/30
127.84%	AMS	ANGLO AMERICAN PLAT.	1998/06/30	123.07%	WBO	WILSON BAY HLM OVC	1996/10/31	119.77%	EXL	EXCELLERATE HDG.	1999/12/31
127.82%	CAT	CAXTON CTP PUBLISH PRINT	1995/02/28	123.04%	MUR	MURRAY & ROBERTS	1999/02/28	119.72%	DDT	DIMENSION DATA HDG.(JSE)	1996/08/31
127.78%	AVI	AVI	1998/12/31	122.97%	AMA	AMAL.APPC.	2002/11/30	119.65%	ABL	AFRICAN BANK INVS.	1995/10/31
127.77%	ILA	ILIAD AFRICA	2003/03/31	122.96%	ILA	ILIAD AFRICA	2003/04/30	119.64%	CRM	CERAMIC INDUSTRIES	1997/06/30
127.76%	BTG	BYTES TECH.GP.	1996/12/31	122.95%	CPA	CORPCAPITAL	1995/08/31	119.64%	PPC	PRETORIA POR.CMT.	2003/12/31
127.72%	BRM	BEARING MAN	2001/10/31	122.93%	IVT	INVICTA	1996/08/31	119.61%	MTN	MTN GROUP	1998/11/30
127.70%	MTN	MTN GROUP	2003/01/31	122.92%	SCN	SCHARRIG MINING	2003/10/31	119.61%	KGM	KAGISO MEDIA	2000/11/30
127.51%	DDT	DIMENSION DATA HDG.(JSE)	1997/02/28	122.88%	NWL	NU WORLD	1995/02/28	119.59%	GDF	GOLD REEF CNO.RSTS.	1998/05/31
127.45%	MMG	MICROMEGA HDG.	1999/05/31	122.88%	ILA	ILIAD AFRICA	2001/12/31	119.58%	TSX	TRANS HEX GROUP	2001/09/30
127.41%	TIW	TIGER WHEELS	1995/07/31	122.73%	ECO	EDGARS CONS.STORES	2003/10/31	119.57%	TIW	TIGER WHEELS	1995/05/31
127.40%	SPG	SUPER GROUP	1996/08/31	122.71%	ILA	ILIAD AFRICA	2002/04/30	119.50%	RNG	RANDGOLD & EXP.	1995/06/30
127.32%	JNC	JOHNNIC	2002/09/30	122.71%	WES	WESCO INVESTMENTS	2000/04/30	119.43%	ITE	ITALTILE	1995/01/31
127.32%	WBO	WILSON BAY HLM OVC	1996/12/31	122.66%	MTN	MTN GROUP	2003/05/31	119.42%	CAT	CAXTON CTP PUBLISH PRINT	1995/03/31
127.30%	GND	GRINDROD	2000/04/30	122.65%	SFN	SASFIN	1995/04/30	119.30%	TPC	TRANSPACO	1997/07/31
127.12%	BRN	BRIMSTONE INV.'N'	2002/12/31	122.47%	NHM	NORTHAM PLATINUM	1998/11/30	119.21%	MBN	MOBILE INDUSTRIES 'N'	2001/04/30
127.07%	SPS	SPESCOM	2002/11/30	122.41%	ITE	ITALTILE	1999/02/28	119.19%	NHM	NORTHAM PLATINUM	1999/11/30

Appendix A.6. Sample Extreme Winners Sorted by Return

Continued.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
119.17%	MMG	MICROMEGA HDG.	1999/07/31	115.10%	PHM	PHUMELELA GMG.& LEIS.	2003/04/30	111.35%	DAW	DS & WHSG.NETWORK	2002/03/31
119.05%	DAW	DS.& WHSG.NETWORK	2002/06/30	115.09%	DDT	DIMENSION DATA HDG.(JSE)	1999/03/31	111.32%	TIW	TIGER WHEELS	2003/04/30
119.00%	IMP	IMPALA PLATINUM	1998/04/30	115.08%	ARI	AFN.RAINBOW MRLS.	1998/08/31	111.30%	JNC	JOHNNIC	2003/03/31
118.98%	PMA	PRIMEDIA	2003/05/31	115.01%	BIL	BHP BILLITON (JSE)	1998/02/28	111.26%	ECO	EDGARS CONS.STORES	2001/12/31
118.93%	CUL	CULLINAN	2002/12/31	114.98%	TRE	TRENCOR	2001/02/28	111.25%	JDG	JD GROUP	2003/02/28
118.89%	WNH	WINHOLD	2002/10/31	114.91%	BIL	BHP BILLITON (JSE)	1999/03/31	111.23%	SYC	SYCOM PROPERTY FUND	1998/09/30
118.87%	ALT	ALLIED TECHNOLOGIES	1996/09/30	114.88%	ART	ARGENT INDUSTRIAL	1998/05/31	111.14%	TKG	TELKOM	2003/06/30
118.84%	RBW	RAINBOW CHICKEN	2000/04/30	114.84%	FRO	FRONTRANGE SLTN.	2003/04/30	111.11%	ENV	ENVIROSERV	1996/05/31
118.83%	BRC	BRANDCORP	2003/03/31	114.84%	WBO	WILSON BAY HLM OVC	1995/04/30	111.10%	AFI	AFRICAN LIFE ASR.	1995/03/31
118.78%	PMA	PRIMEDIA	2003/07/31	114.81%	DLV	DORBYL	1996/08/31	111.08%	TPC	TRANSPACO	1997/08/31
118.71%	LAN	LA GROUP 'N'	1997/06/30	114.79%	CSB	CASHBUILD	2001/08/31	111.06%	ADR	ADCORP	2003/02/28
118.70%	PAM	PALABORA M NING	1998/08/31	114.70%	DAW	DS.& WHSG.NETWORK	1995/05/31	110.98%	RAH	REAL AFRICA	1996/10/31
118.60%	ADR	ADCORP	2003/03/31	114.67%	IDI	IDION TECH.	2001/11/30	110.97%	WNH	WINHOLD	2002/12/31
118.60%	IVT	INVICTA	1995/11/30	114.66%	ART	ARGENT INDUSTRIAL	1998/09/30	110.92%	COM	COMAIR	1998/12/31
118.55%	GDF	GOLD REEF CNO.RSTS.	2003/12/31	114.50%	TRT	TOURISM INV.	2001/09/30	110.90%	BRC	BRANDCORP	2003/05/31
118.54%	HWN	HOWDEN AFRICA	2003/02/28	114.47%	TIW	TIGER WHEELS	1995/05/30	110.88%	CUL	CULLINAN	2002/03/31
118.51%	HCI	HOSKEN CONS INV.	1999/06/30	114.46%	GFI	GOLD FIELDS	2001/12/31	110.88%	FSR	FIRSTRAND	1996/08/31
118.40%	JCM	JOHNNIC COMMS.	1995/08/31	114.36%	ILA	ILIAD AFRICA	2002/10/31	110.83%	CRG	CARGO CARRIERS	2003/09/30
118.33%	ITE	ITALTILE	1995/03/31	114.35%	CNC	CONCOR	1995/03/31	110.80%	DTC	DATATEC	1995/11/30
118.27%	MRF	MERAFE RESOURCES	1997/12/31	114.30%	TPC	TRANSPACO	2001/08/31	110.77%	MTA	METAIR INVESTMENTS	2000/10/31
118.22%	WES	WESCO INVESTMENTS	1998/11/30	114.26%	AFI	AFRICAN LIFE ASR.	1997/07/31	110.76%	ILA	ILIAD AFRICA	2001/01/31
118.21%	NPN	NASPERS	2003/04/30	114.21%	MST	MUSTEK	2002/02/28	110.72%	RNG	RANDGOLD & EXP.	2002/02/28
118.21%	SCN	SCHARRIG MINING	2003/03/31	114.18%	OMN	OMNIA	2003/11/30	110.72%	IMP	IMPALA PLATINUM	1999/02/28
118.20%	MET	METROPOLITAN HDG.	1997/03/31	114.16%	SBL	SABLE	1999/05/31	110.71%	PMN	PRIMEDIA 'N'	2003/09/30
118.18%	EXL	EXCELLERATE HDG.	1999/06/30	114.16%	SBL	SABLE	1999/07/31	110.70%	RAH	REAL AFRICA	1997/01/31
118.16%	TSX	TRANS HEX GROUP	1995/10/31	114.04%	MTN	MTN GROUP	1997/04/30	110.65%	HCI	HOSKEN CONS.INV.	1999/03/31
118.16%	GDF	GOLD REEF CNO.RSTS.	1998/10/31	114.01%	BRC	BRANDCORP	2002/01/31	110.65%	SCN	SCHARRIG MINING	2002/08/31
118.14%	WNH	WINHOLD	2001/08/31	113.95%	MLA	MITTAL STEEL SA.	1998/09/30	110.65%	SCN	SCHARRIG MINING	2002/09/30
118.14%	WNH	WINHOLD	2001/10/31	113.92%	UCS	UCS GROUP	2003/05/30	110.63%	TRT	TOURISM INV.	2000/10/31
118.11%	NPK	NAMPAK	1998/11/30	113.89%	PIM	PRISM	2003/04/30	110.56%	MBN	MOBILE INDUSTRIES 'N'	2001/05/31
117.96%	NCL	NEW CLICKS HDG.	1997/03/31	113.85%	ILA	ILIAD AFRICA	2000/10/31	110.42%	ARI	AFN.RAINBOW MRLS.	1998/10/31
117.92%	SKJ	SEKUNJALO INVS.	2002/08/31	113.84%	FSR	FIRSTRAND	1995/10/31	110.39%	HAR	HARMONY GOLD MNG.	2000/11/30
117.88%	CNC	CONCOR	2001/09/30	113.82%	FOS	FOSCHINI	1998/08/31	110.36%	CPA	CORPCAPITAL	2003/01/31
117.88%	BRC	BRANDCORP	2003/06/30	113.80%	NPK	NAMPAK	1998/12/31	110.27%	HWN	HOWDEN AFRICA	2003/05/31
117.82%	JDG	JD GROUP	2003/03/31	113.79%	AMA	AMALAPPC.	1997/05/31	110.22%	GNK	GRINTEK	1998/04/30
117.80%	GDF	GOLD REEF CNO.RSTS.	2003/10/31	113.79%	NHM	NORTHAM PLATINUM	2001/10/31	110.19%	FBR	FAMOUS BRANDS	1998/12/31
117.73%	AFI	AFRICAN LIFE ASR.	1995/07/31	113.78%	CAT	CAXTON CTP PUBLISH PRINT	1995/01/31	110.18%	MVL	MVELAPHANDA RES.	2001/10/31
117.72%	TRU	TRUWORTHS INTL.	1998/08/31	113.75%	BJM	BARNARD JAC.MELLET	1998/07/31	110.13%	UTR	UNITRANS	1999/01/31
117.72%	DLV	DORBYL	1999/01/31	113.73%	PMN	PRIMEDIA 'N'	2003/08/31	110.06%	BPL	BARPLATS INVS.	2000/05/31
117.70%	SOV	SOVEREIGN FOOD INVS.	2000/09/30	113.71%	RBW	RAINBOW CHICKEN	2000/11/30	110.01%	GDF	GOLD REEF CNO.RSTS.	2002/11/30
117.70%	SOV	SOVEREIGN FOOD INVS.	2000/12/31	113.69%	BEL	BELL EQUIPMENT	1999/04/30	110.01%	HDC	HUDACO	1999/03/31
117.63%	LON	LONM N (JSE)	1999/01/31	113.69%	ECO	EDGARS CONS STORES	2002/05/30	110.01%	HVL	HIGHVELD STL.& VNM.	2003/09/30
117.62%	MLA	MITTAL STEEL SA.	2001/12/31	113.68%	INM	INMINS	2003/09/30	109.90%	CPI	CAPITEC BANK	2002/12/31
117.61%	KWV	KWV BELEGGINGS BPK.	1999/02/28	113.60%	SYC	SYCOM PROPERTY FUND	1998/08/31	109.76%	INM	INMINS	2002/06/30
117.61%	BCX	BUSINESS CONNEXION GROUP	1997/05/31	113.51%	KGM	KAGISO MEDIA	2002/12/31	109.75%	APK	ASTRAPAK	2000/08/31
117.45%	DAW	DS.& WHSG.NETWORK	2002/07/31	113.43%	DSY	DISCOVERY	2003/03/31	109.75%	SCN	SCHARRIG MINING	2003/08/31
117.39%	ABL	AFRICAN BANK INVS.	1996/01/31	113.35%	RNG	RANDGOLD & EXP.	1998/09/30	109.74%	KGM	KAGISO MEDIA	1997/02/28
117.39%	APK	ASTRAPAK	2003/04/30	113.35%	CMH	COMBINED MOTOR	1998/12/31	109.73%	LAR	LA GROUP	1997/07/31
117.38%	SUR	SPUR	2000/06/30	113.35%	AGL	ANGLO AMERICAN (JSE)	1998/08/31	109.72%	RNG	RANDGOLD & EXP.	2001/04/30
117.30%	CLE	CLIENTELE LF.ASR.	1997/09/30	113.35%	BRM	BEARING MAN	1998/12/31	109.65%	APK	ASTRAPAK	2002/10/31
117.29%	AMS	ANGLO AMERICAN PLAT.	2000/02/29	113.10%	BRN	BRIMSTONE INV.'N'	2002/06/30	109.64%	SKJ	SEKUNJALO INVS.	2002/12/31
117.11%	SCN	SCHARRIG MINING	2003/07/31	113.05%	AVI	AVI	1998/11/30	109.59%	IMP	IMPALA PLATINUM	2000/05/31
117.00%	CMH	COMBINED MOTOR	2003/11/30	113.05%	RMH	RMB	1997/01/31	109.47%	ADH	ADVTECH	2002/12/31
117.00%	ECO	EDGARS CONS.STORES	2002/03/31	112.95%	CRG	CARGO CARRIERS	2001/06/30	109.47%	CPI	CAPITEC BANK	2002/10/31
116.98%	RAH	REAL AFRICA	1996/12/31	112.94%	GND	GRINDROD	1999/09/30	109.45%	MCU	M CUBED HOLDINGS	2003/02/28
116.94%	ECO	EDGARS CONS.STORES	2003/06/30	112.89%	ABL	AFRICAN BANK INVS.	2003/09/30	109.43%	BRC	BRANDCORP	2002/12/31
116.93%	SPS	SPESCOM	1996/06/30	112.86%	SOL	SASOL	1995/11/30	109.41%	IMP	IMPALA PLATINUM	1998/01/31
116.93%	CSB	CASHBUILD	2001/07/31	112.85%	JSC	JASCO ELTN.	2002/03/31	109.39%	HAR	HARMONY GOLD MNG.	2001/11/30
116.81%	GFI	GOLD FIELDS	2001/11/30	112.84%	WES	WESCO INVESTMENTS	2000/11/30	109.37%	SAP	SAPPI	2001/06/30
116.80%	EXL	EXCELLERATE HDG.	1999/07/31	112.84%	SHP	SHOPRITE	1997/03/31	109.36%	RNG	RANDGOLD & EXP.	2002/03/31
116.79%	AMS	ANGLO AMERICAN PLAT.	1998/10/31	112.76%	CNL	CONTROL INSTRUMENTS GP.	1995/07/31	109.34%	AMS	ANGLO AMERICAN PLAT.	1998/11/30
116.78%	LAN	LA GROUP 'N'	2003/06/30	112.73%	ABL	AFRICAN BANK INVS.	2003/12/31	109.29%	ITE	ITALTILE	1995/04/30
116.72%	LAR	LA GROUP	1995/02/28	112.67%	SPG	SUPER GROUP	2003/04/30	109.28%	MDC	MEDI CLINIC	1995/10/31
116.70%	CLE	CLIENTELE LF.ASR.	2003/12/31	112.61%	NPN	NASPERS	1999/05/31	109.25%	SHP	SHOPRITE	1996/10/31
116.69%	RLO	REUNERT	1999/09/30	112.53%	SPS	SPESCOM	2003/05/31	109.21%	CPL	CAPITAL PROPERTY FD.	1998/12/31
116.62%	HCI	HOSKEN CONS.INV.	1999/05/31	112.51%	ILA	ILIAD AFRICA	2003/10/31	109.16%	FOS	FOSCHINI	2003/12/31
116.57%	MOB	MOBILE INDUSTRIES	2001/03/31	112.50%	APN	ASPEN PHMCR.	1998/06/30	109.10%	CRG	CARGO CARRIERS	2001/05/31
116.48%	RMH	RMB	1996/05/31	112.48%	NWL	NU WORLD	1997/05/31	109.07%	INM	INMINS	2001/08/31
116.26%	DAW	DS.& WHSG.NETWORK	2002/05/31	112.45%	TRE	TRENCOR	2001/03/31	109.06%	MTA	METAIR INVESTMENTS	2000/09/30
116.24%	KGM	KAGISO MEDIA	2003/09/30	112.42%	BRC	BRANDCORP	2002/07/31	109.03%	KGM	KAGISO MEDIA	2003/07/31
116.19%	DDT	DIMENSION DATA HDG (JSE)	1996/09/30	112.41%	JDG	JD GROUP	2002/12/31	108.99%	HWN	HOWDEN AFRICA	2003/09/30
115.88%	DAW	DS.& WHSG.NETWORK	1997/11/30	112.40%	DDT	DIMENSION DATA HDG.(JSE)	1999/06/30	108.96%	TPC	TRANSPACO	2003/02/28
115.88%	NWL	NU WORLD	2003/05/31	112.40%	MST	MUSTEK	2001/05/31	108.93%	MRF	MERAFE RESOURCES	1997/07/31
115.87%	KGM	KAGISO MEDIA	2003/08/31	112.35%	CSB	CASHBUILD	2001/06/30	108.88%	BSB	THE HOUSE OF BUSBY	2003/12/31
115.75%	BRM	BEARING MAN	2001/12/31	112.29%	PMA	PRIMEDIA	2003/08/31	108.86%	ARL	ASTRAL FOODS	2002/10/31
115.72%	ADR	ADCORP	1997/05/31	112.29%	OMN	OMNIA	2002/03/31	108.84%	FRO	FRONTRANGE SLTN.	1998/12/31
115.68%	DST	DISTELL GROUP	1999/02/28	112.24%	SCN	SCHARRIG MINING	2000/03/31	108.78%	CCT	CONNECTION GP.	2001/10/31
115.67%	ERP	ERP.COM	2002/11/30	112.03%	TRU	TRUWORTHS INTL.	1998/12/31	108.76%	GDF	GOLD REEF CNO.RSTS.	2003/09/30
115.62%	GNK	GRINTEK	1997/04/30	112.02%	SBL	SABLE	1999/08/31	108.66%	GMB	GLENRAND M I B	2003/05/31
115.58%	WES	WESCO INVESTMENTS	2000/10/31	112.02%	ECO	EDGARS CONS.STORES	1999/04/30	108.63%	MET	METROPOLITAN HDG.	1997/04/30
115.57%	NPN	NASPERS	1999/08/31	112.01%	NTC	NETWORK HLTHCR.	2001/04/30	108.57%	APK	ASTRAPAK	2003/01/31
115.56%	CNC	CONCOR	1995/01/31	111.99%	HWN	HOWDEN AFRICA	2003/06/30	108.56%	ECO	EDGARS CONS.STORES	2003/01/31
115.54%	BRC	BRANDCORP	2003/08/31	111.96%	UTR	UNITRANS	1999/02/28	108.46%	ART	ARGENT INDUSTRIAL	1998/12/31
115.50%	PSG	PSG GROUP	2003/11/30	111.78%	IDI	IDION TECH.	2002/07/31	108.46%	SPG	SUPER GROUP	1997/04/30
115.43%	ENV	ENVIROSERV	2000/02/29	111.76%	MMG	MICROMEGA HDG.	2003/04/30	108.44%	BSB	THE HOUSE OF BUSBY	2003/11/30
115.38%	KAP	KAP INTL.	2002/07/31	111.75%	MST	MUSTEK	2003/04/30	108.42%	EOH	ENTER.OUTSC.	2003/04/30
115.38%	BSB	THE HOUSE OF BUSBY	2003/10/31	111.74%	AGL	ANGLO AMERICAN (JSE)	1999/01/31	108.40%	SCN	SCHARRIG MINING	2003/02/28
115.37%	RNG	RANDGOLD & EXP.	2001/06/30	111.71%	ANG	ANGLOGOLD ASHANTI	2001/04/30	108.37%	MET	METROPOLITAN HDG.	1996/12/31
115.35%	AFL	AFLEASE GD & UR.RES.	1997/12/31	111.70%	HCI	HOSKEN CONS.INV.	1999/07/31	108.37%	GDF	GOLD REEF CNO.RSTS.	1998/04/30
115.29%	KGM	KAGISO MEDIA	2001/01/31	111.69%	HCI	HOSKEN CONS.INV.	1996/07/31	108.35%	CLE	CLIENTELE LF.ASR.	2003/11/30
115.29%	CCT	CONNECTION GP.	2003/09/30	111.68%	BRN	BRIMSTONE INV.'N'	2003/02/28	108.33%	TPC	TRANSPACO	1996/10/31
115.28%	SOV	SOVEREIGN FOOD INVS.	2000/03/31	111.55%	EOH	ENTER.OUTSC.	2002/09/30	108.33%	RAH	REAL AFRICA	1995/07/31
115.26%	RNG	RANDGOLD & EXP.	1995/12/31	111.52%	SFN	SASFIN	1995/03/31	108.33%	RAH	REAL AFRICA	1995/08/31
115.22%	PIM	PRISM	2002/10/31	111.52%	HWN	HOWDEN AFRICA	2003/11/30	108.31%	ALT	ALLIED TECHNOLOGIES	1995/10/31
115.21%	APN	ASPEN PHMCR.	1998/08/31	111.52%	GRF	GROUP FIVE	2003/04/30	108.31%	AGL	ANGLO AMERICAN (JSE)	1996/09/30
115.14%	SUR	SPUR	2000/04/30	111.51%	IVT	INVICTA	2001/11/30	108.30%	CUL	CULLINAN	2003/04/30
115.13%	MDC	MEDI CLINIC	1995/09/30	111.46%	AFI	AFRICAN LIFE ASR.	1995/08/31	108.26%	JCM	JOHNNIC COMMS.	1995/05/31
115.12%	ABL	AFRICAN BANK INVS.	2003/11/30	111.45%	TIW	TIGER WHEELS	1995/04/30	108.25%	JCI	JCI	2002/08/31

Appendix A.6. Sample Extreme Winners Sorted by Return

Continued.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
108.23%	SAP	SAPPI	1998/07/31	104.71%	NWL	NU WORLD	2003/07/31	101.86%	FOS	FOSCHINI	2003/11/30
108.08%	AFL	AFLEASE GD.& UR.RES	2002/01/31	104.67%	CPL	CAPITAL PROPERTY FD.	1998/11/30	101.81%	CAT	CAXTON CTP PUBLISH PRINT	1995/04/30
108.07%	AMA	AMALAPPC.	2001/12/31	104.67%	IVT	INVICTA	1999/02/26	101.79%	BIL	BHP BILLITON (JSE)	1998/10/31
108.06%	PSG	PSG GROUP	2003/03/31	104.66%	PHM	PHUMELELA GMG.& LEIS.	2003/01/31	101.78%	SCN	SCHARRIG MINING	2003/06/30
108.05%	CPL	CAPITAL PROPERTY FD.	1998/08/31	104.59%	WNH	WINHOLD	2001/12/31	101.76%	AFE	AECI	1999/03/31
108.01%	SPS	SPESCOM	2003/06/30	104.56%	PSG	PSG GROUP	1995/02/28	101.67%	ALT	ALLIED TECHNOLOGIES	1996/07/31
107.96%	NHM	NORTHAM PLATINUM	1999/12/31	104.54%	MET	METROPOLITAN HDG.	1995/01/31	101.64%	GDH	GOOD HOPE DIAMONDS	2000/06/30
107.95%	ARL	ASTRAL FOODS	2003/06/30	104.48%	TRE	TRENCOR	2000/05/31	101.60%	RLO	REUNERT	1999/01/31
107.91%	ILA	ILIAD AFRICA	2001/10/31	104.48%	BRN	BRIMSTONE INV.'N'	2002/02/28	101.59%	LON	LONMIN (JSE)	1998/12/31
107.83%	RMH	RMB	1995/09/30	104.48%	BRN	BRIMSTONE INV.'N'	2002/03/31	101.57%	RLO	REUNERT	2000/05/31
107.75%	RNG	RANDGOLD & EXP.	2000/12/31	104.44%	MES	MESSINA	2001/08/31	101.53%	NCL	NEW CLICKS HDG.	1998/08/31
107.73%	ITE	ITALTILE	1999/01/31	104.41%	PMN	PRIMEDIA 'N'	2003/07/31	101.44%	WNH	WINHOLD	2002/01/31
107.65%	GDF	GOLD REEF CNO.RSTS.	2003/08/31	104.41%	RNG	RANDGOLD & EXP.	1996/03/31	101.43%	RBW	RAINBOW CHICKEN	1998/02/28
107.43%	ADR	ADCORP	1997/02/28	104.40%	BRC	BRANDCORP	2001/10/31	101.39%	NTC	NETWORK HLTHCR.	2001/05/31
107.39%	JDG	JD GROUP	1998/12/31	104.39%	TRE	TRENCOR	2000/04/30	101.35%	CCT	CONNECTION GP.	2003/12/31
107.38%	PIK	PICK N PAY STORES	1998/09/30	104.39%	GND	GRINDROD	2000/02/29	101.34%	BCX	BUSINESS CONNEXION GROUP	1995/03/31
107.37%	BRM	BEARING MAN	1999/03/31	104.34%	KGM	KAGISO MEDIA	2002/10/31	101.33%	AFI	AFRICAN LIFE ASR.	1995/10/31
107.35%	INM	INMINS	2001/07/31	104.33%	DTC	DATATEC	1995/12/31	101.30%	SOV	SOVEREIGN FOOD INVS.	2000/07/31
107.31%	ITE	ITALTILE	1997/02/28	104.33%	FSR	FIRSTRAND	1996/04/30	101.27%	RMH	RMB	1995/10/31
107.21%	PSG	PSG GROUP	1996/05/31	104.31%	BAW	BARLOWORLD	1998/12/31	101.22%	BRC	BRANDCORP	1995/03/31
107.20%	SAP	SAPPI	1998/06/30	104.30%	CCT	CONNECTION GP.	2003/10/31	101.19%	GND	GRINDROD	1999/12/31
107.14%	WNH	WINHOLD	1996/01/31	104.27%	ABL	AFRICAN BANK INVS.	1997/08/31	101.19%	WNH	WINHOLD	2003/10/31
107.11%	NPN	NASPERS	1999/09/30	104.23%	INL	INVESTEC	1996/07/31	101.15%	CCT	CONNECTION GP.	1999/10/31
107.08%	ILA	ILIAD AFRICA	2003/07/31	104.16%	RLO	REUNERT	1999/07/31	101.10%	TRE	TRENCOR	2001/05/31
107.06%	PSG	PSG GROUP	1997/05/31	104.16%	ECO	EDGARS CONS.STORES	2002/04/30	101.08%	AMS	ANGLO AMERICAN PLAT.	2000/01/31
107.05%	MAF	MUTUAL & FEDERAL IN.	1995/04/30	104.11%	CNL	CONTROL INSTRUMENTS GP.	1995/08/31	101.04%	ITE	ITALTILE	1997/04/30
107.02%	ILA	ILIAD AFRICA	2003/06/30	104.06%	TRE	TRENCOR	2000/09/30	101.01%	MVL	MVELAPHANDA RES.	2001/09/30
107.02%	PMA	PRIMEDIA	1996/06/30	104.02%	WES	WESCO INVESTMENTS	1998/10/31	100.84%	MTN	MTN GROUP	1998/08/31
106.96%	SPS	SPESCOM	1996/07/31	103.98%	FBR	FAMOUS BRANDS	1999/01/31	100.77%	TSX	TRANS HEX GROUP	1996/01/31
106.95%	CSB	CASHBUILD	1999/02/28	103.97%	MBN	MOBILE INDUSTRIES 'N'	2001/03/31	100.76%	MTA	METAIR INVESTMENTS	2000/11/30
106.90%	MTL	MERCANTILE BANK	2003/03/31	103.97%	ADR	ADCORP	1995/01/31	100.73%	ANG	ANGLOGOLD ASHANTI	1995/05/31
106.88%	HVL	HIGHVELD STL & VNM.	2003/06/30	103.97%	GNK	GRINTEK	1995/01/31	100.73%	SRN	SEARDEL INV.	1999/12/31
106.88%	EOH	ENTER.OUTSC.	2003/06/30	103.97%	LBH	LIBERTY	1999/01/31	100.70%	MTA	METAIR INVESTMENTS	2001/09/30
106.85%	JCM	JOHNNIC COMMS.	1999/08/31	103.96%	MLA	MITTAL STEEL SA.	1998/10/31	100.69%	ANG	ANGLOGOLD ASHANTI	2000/12/31
106.85%	GNK	GRINTEK	1997/07/31	103.95%	SOV	SOVEREIGN FOOD INVS.	2000/04/30	100.67%	GND	GRINDROD	2000/10/31
106.84%	SBL	SABLE	1999/06/30	103.93%	OMN	OMNIA	2003/12/31	100.65%	BEL	BELL EQUIPMENT	1999/11/30
106.84%	AMS	ANGLO AMERICAN PLAT.	1999/08/31	103.91%	ILA	ILIAD AFRICA	2003/11/30	100.58%	RNG	RANDGOLD & EXP.	2002/08/31
106.83%	IDI	IDION TECH.	2001/09/30	103.90%	TIW	TIGER WHEELS	1995/01/31	100.56%	IVT	INVICTA	1995/10/31
106.81%	JNC	JOHNNIC	1999/10/31	103.83%	AMA	AMALAPPC.	2001/09/30	100.53%	MBN	MOBILE INDUSTRIES 'N'	2001/02/28
106.72%	MET	METROPOLITAN HDG.	1995/09/30	103.80%	BVT	BIDVEST GROUP	1997/03/31	100.49%	GDH	GOOD HOPE DIAMONDS	2001/10/31
106.70%	AGL	ANGLO AMERICAN (JSE)	1998/11/30	103.80%	PMN	PRIMEDIA 'N'	2003/02/28	100.49%	GDH	GOOD HOPE DIAMONDS	2001/11/30
106.67%	TPC	TRANSPACO	2002/08/31	103.79%	ADR	ADCORP	2003/04/30	100.49%	GDH	GOOD HOPE DIAMONDS	2001/12/31
106.66%	RNG	RANDGOLD & EXP.	2001/07/31	103.76%	AFE	AECI	1998/12/31	100.49%	GDH	GOOD HOPE DIAMONDS	2002/01/31
106.65%	AFL	AFLEASE GD.& UR.RES.	2001/04/30	103.76%	BJM	BARNARD JAC.MELLET	1996/09/30	100.44%	ABL	AFRICAN BANK INVS.	2002/12/31
106.65%	IVT	INVICTA	2003/11/30	103.74%	KGM	KAGISO MEDIA	2001/07/31	100.43%	INM	INMINS	2003/12/31
106.61%	MET	METROPOLITAN HDG.	1997/05/31	103.71%	DTC	DATATEC	2002/12/31	100.35%	EXL	EXCELLERATE HDG.	1999/10/31
106.59%	WNH	WINHOLD	2002/03/31	103.70%	PMA	PRIMEDIA	2003/04/30	100.28%	SCN	SCHARRIG MINING	2003/12/31
106.50%	INM	INMINS	2003/06/30	103.70%	MLA	MITTAL STEEL SA.	1999/02/28	100.22%	BTG	BYTES TECH.GP.	1997/12/31
106.49%	RBW	RAINBOW CHICKEN	2002/10/31	103.69%	EXL	EXCELLERATE HDG.	2003/10/31	100.13%	AFE	AECI	1998/09/30
106.48%	HCI	HOSKEN CONS.INV.	1999/10/31	103.68%	ELR	ELB GROUP	1999/02/28	100.09%	SBL	SABLE	2003/10/31
106.42%	PPR	PUTCO PROPERTIES	1999/02/28	103.65%	ITE	ITALTILE	1995/02/28	100.08%	MES	MESSINA	1996/03/31
106.41%	NHM	NORTHAM PLATINUM	2000/06/30	103.64%	BRN	BRIMSTONE INV.'N'	2001/10/31	100.08%	AFB	ALEXANDER FORBES	1998/12/31
106.40%	MST	MUSTEK	2000/10/31	103.60%	RAH	REAL AFRICA	1997/09/30	100.05%	ILA	ILIAD AFRICA	2003/09/30
106.37%	SYC	SYCOM PROPERTY FUND	1998/10/31	103.58%	BRC	BRANDCORP	2002/04/30	100.01%	ARI	AFN.RAINBOW MRLS.	1999/02/28
106.33%	DGC	DIGICORE	2002/10/31	103.47%	WNH	WINHOLD	2000/07/31	100.00%	AFL	AFLEASE GD.& UR.RES.	1996/01/31
106.33%	BCX	BUSINESS CONNEXION GROUP	1997/11/30	103.41%	GRF	GROUP FIVE	2002/01/31	100.00%	AFL	AFLEASE GD.& UR.RES.	1996/02/29
106.25%	KAP	KAP INTL	2002/10/31	103.34%	TSX	TRANS HEX GROUP	2001/11/30	100.00%	ART	ARGENT INDUSTRIAL	1999/03/31
106.20%	BPL	BARPLATS INVS.	2000/06/30	103.28%	RBW	RAINBOW CHICKEN	1999/11/30	100.00%	GDH	GOOD HOPE DIAMONDS	1996/07/31
106.18%	HCI	HOSKEN CONS.INV.	1996/04/30	103.22%	TPC	TRANSPACO	2002/09/30	100.00%	MUR	MURRAY & ROBERTS	2000/05/31
106.15%	AMA	AMALAPPC.	2002/09/30	103.21%	MLA	MITTAL STEEL SA.	2003/02/28	100.00%	SKJ	SEKUNJALO INVS.	2003/04/30
106.12%	PHM	PHUMELELA GMG.& LEIS.	2003/06/30	103.21%	MBN	MOBILE INDUSTRIES 'N'	2000/11/30	100.00%	TPC	TRANSPACO	1996/09/30
106.09%	AFI	AFRICAN LIFE ASR.	1995/11/30	103.20%	MAF	MUTUAL & FEDERAL IN.	1995/03/31	100.00%	VLE	VALUE GROUP	2001/09/30
106.06%	LON	LONMIN (JSE)	1998/09/30	103.20%	UCS	UCS GROUP	1998/12/31	100.00%	WNH	WINHOLD	1995/09/30
106.04%	TIW	TIGER WHEELS	1995/12/31	103.15%	SUR	SPUR	2000/08/31				
106.02%	BRC	BRANDCORP	2003/11/30	103.13%	PSG	PSG GROUP	1996/06/30				
105.98%	IVT	INVICTA	2002/02/28	103.12%	MUR	MURRAY & ROBERTS	1999/01/31				
105.93%	DDT	DIMENSION DATA HDG.(JSE)	1997/07/31	103.12%	MOB	MOBILE INDUSTRIES	2000/11/30				
105.89%	RNG	RANDGOLD & EXP.	1995/04/30	103.09%	JCD	JCI	2002/10/31				
105.88%	CNC	CONCOR	2001/03/31	103.06%	GRF	GROUP FIVE	1999/03/31				
105.87%	ALT	ALLIED TECHNOLOGIES	1999/10/31	103.03%	WBO	WILSON BAY HLM OVC	1996/07/31				
105.80%	ABL	AFRICAN BANK INVS.	2003/10/31	102.96%	MET	METROPOLITAN HDG.	1997/02/28				
105.74%	DLV	DORBYL	1995/02/28	102.93%	IPL	IMPERIAL	1995/01/31				
105.72%	RNG	RANDGOLD & EXP.	1998/08/31	102.93%	ARL	ASTRAL FOODS	2003/11/30				
105.63%	BRC	BRANDCORP	2003/02/28	102.93%	LAR	LA GROUP	2003/06/30				
105.61%	PHM	PHUMELELA GMG.& LEIS.	2003/11/30	102.83%	CRG	CARGO CARRIERS	2001/12/31				
105.51%	APN	ASPEN PHMCR.	1998/09/30	102.78%	INM	INMINS	2000/12/31				
105.51%	GIJ	GIJIMA AST GROUP	1998/09/30	102.74%	ABL	AFRICAN BANK INVS.	2003/02/28				
105.46%	HWN	HOWDEN AFRICA	2002/07/31	102.68%	AFL	AFLEASE GD.& UR.RES.	1996/06/30				
105.44%	IVT	INVICTA	1995/01/31	102.66%	WNH	WINHOLD	2001/11/30				
105.44%	BRC	BRANDCORP	2003/07/31	102.66%	AFI	AFRICAN LIFE ASR.	1997/06/30				
105.40%	MAF	MUTUAL & FEDERAL IN.	1995/02/28	102.64%	FSR	FIRSTRAND	1996/12/31				
105.37%	MDC	MEDI CLINIC	2000/04/30	102.59%	ART	ARGENT INDUSTRIAL	2000/08/31				
105.30%	PMA	PRIMEDIA	1996/03/31	102.50%	SNT	SANTAM	1995/03/31				
105.28%	SFN	SASFIN	1995/05/31	102.46%	HCI	HOSKEN CONS.INV.	1998/12/31				
105.27%	RNG	RANDGOLD & EXP.	2001/09/30	102.44%	BJM	BARNARD JAC.MELLET	1998/06/30				
105.21%	LON	LONMIN (JSE)	1998/10/31	102.44%	LON	LONMIN (JSE)	1998/05/31				
105.21%	SKJ	SEKUNJALO INVS.	2002/02/28	102.40%	FRO	FRONTRANGE SLTN.	2003/01/31				
105.19%	JCM	JOHNNIC COMMS.	1995/06/30	102.30%	CPA	CORPCAPITAL	2002/07/31				
105.15%	SHF	STEINHOFF INTL.	1999/02/28	102.24%	TKG	TELKOM	2003/06/31				
105.15%	NWL	NU WORLD	1997/06/30	102.23%	MPC	MR PRICE GROUP	1998/09/30				
105.10%	CLH	CITY LODGE HOTELS	2001/12/31	102.23%	HWN	HOWDEN AFRICA	2003/01/31				
105.07%	CRM	CERAMIC INDUSTRIES	1996/07/31	102.21%	IVT	INVICTA	2003/12/31				
104.96%	CSB	CASHBUILD	2001/10/31	102.17%	TRT	TOURISM INV.	2000/11/30				
104.90%	ART	ARGENT INDUSTRIAL	2002/02/28	102.14%	CSB	CASHBUILD	1999/04/30				
104.82%	GNK	GRINTEK	1998/03/31	102.05%	BRC	BRANDCORP	2001/09/30				
104.79%	PWK	PIK N PAY	1998/12/31	102.01%	MVL	MVELAPHANDA RES.	2000/07/31				
104.76%	LBH	LIBERTY	1998/12/31	101.96%	WNH	WINHOLD	1996/11/30				
104.72%	ANG	ANGLOGOLD ASHANTI	2001/09/30	101.88%	APK	ASTRAPAK	2003/03/31				

Appendix A.7. Sample Extreme Losers Sorted by Company

The table lists 12 month periods of extreme performance for all extreme losers on the JSE Securities Exchange from January 1995 until December 2004 included in this study. An extreme loser is defined as a stock which at least halves in a 12 month period. In addition to the names of all extreme performers, the table lists the share codes for each, the start date of the 12 month period of extreme performance, as well as the return over each of these periods. The lists are sorted by company.

Code	Company Name	Start Date	Total Return
ADR	ADCORP	1999/11/30	-53.03%
ADR	ADCORP	2000/03/31	-51.79%
ADR	ADCORP	2001/08/31	-55.86%
ADR	ADCORP	2001/08/30	-51.86%
ADH	ADVTECH	1998/03/31	-58.58%
ADH	ADVTECH	1998/04/30	-54.69%
ADH	ADVTECH	1998/05/31	-62.75%
ADH	ADVTECH	1998/06/30	-57.13%
ADH	ADVTECH	1998/07/31	-57.84%
ADH	ADVTECH	1998/10/31	-64.61%
ADH	ADVTECH	1998/11/30	-55.89%
ADH	ADVTECH	1998/12/31	-61.91%
ADH	ADVTECH	1999/01/31	-71.68%
ADH	ADVTECH	1999/02/28	-75.49%
ADH	ADVTECH	1999/03/31	-79.33%
ADH	ADVTECH	1999/04/30	-83.38%
ADH	ADVTECH	1999/05/31	-78.93%
ADH	ADVTECH	1999/06/30	-72.24%
ADH	ADVTECH	1999/07/31	-77.11%
ADH	ADVTECH	1999/08/31	-89.63%
ADH	ADVTECH	1999/09/30	-80.00%
ADH	ADVTECH	1999/10/31	-79.96%
ADH	ADVTECH	1999/11/30	-79.93%
ADH	ADVTECH	1999/12/31	-76.15%
AFE	AECI	1997/09/30	-55.82%
AFE	AECI	1997/11/30	-52.13%
AFE	AECI	1998/05/31	-51.44%
AFL	AFLEASE GD.& UR.RES.	1995/01/31	-50.00%
AFL	AFLEASE GD.& UR.RES.	1997/06/30	-60.00%
AFL	AFLEASE GD.& UR.RES.	1999/10/31	-55.56%
AFL	AFLEASE GD.& UR.RES.	1999/11/30	-52.09%
AFL	AFLEASE GD.& UR.RES.	2003/01/31	-58.27%
AFL	AFLEASE GD.& UR.RES.	2003/03/31	-50.59%
AFL	AFLEASE GD.& UR.RES.	2003/06/30	-70.69%
AFL	AFLEASE GD.& UR.RES.	2003/07/31	-72.00%
AFL	AFLEASE GD.& UR.RES.	2003/08/31	-73.28%
AFL	AFLEASE GD.& UR.RES.	2003/09/30	-70.73%
AFL	AFLEASE GD.& UR.RES.	2003/10/31	-63.97%
AFL	AFLEASE GD.& UR.RES.	2003/11/30	-62.89%
ARI	AFN.RAINBOW MRLS.	1996/11/30	-55.10%
ARI	AFN.RAINBOW MRLS.	1996/12/31	-54.95%
ARI	AFN.RAINBOW MRLS.	1997/01/31	-55.97%
ARI	AFN.RAINBOW MRLS.	1997/02/28	-67.24%
ARI	AFN.RAINBOW MRLS.	1997/03/31	-66.46%
ARI	AFN.RAINBOW MRLS.	1997/05/31	-57.70%
ARI	AFN.RAINBOW MRLS.	1997/06/30	-67.93%
ARI	AFN.RAINBOW MRLS.	1997/07/31	-68.31%
ARI	AFN.RAINBOW MRLS.	1997/08/31	-78.14%
ARI	AFN.RAINBOW MRLS.	1997/09/30	-58.89%
ARI	AFN.RAINBOW MRLS.	1997/10/31	-68.27%
ARI	AFN.RAINBOW MRLS.	1997/11/30	-62.24%
ARI	AFN.RAINBOW MRLS.	1997/12/31	-67.80%
ARI	AFN.RAINBOW MRLS.	1998/01/31	-53.42%
ABL	AFRICAN BANK INVS.	1998/10/31	-53.86%
ABL	AFRICAN BANK INVS.	1998/06/30	-59.26%
ABL	AFRICAN BANK INVS.	1999/07/31	-57.55%
ABL	AFRICAN BANK INVS.	1999/11/30	-56.30%
ABL	AFRICAN BANK INVS.	1999/12/31	-57.87%
ABL	AFRICAN BANK INVS.	2000/01/31	-50.71%
AFI	AFRICAN LIFE ASR.	1999/06/30	-53.05%
AFI	AFRICAN LIFE ASR.	1999/07/31	-60.98%
AFI	AFRICAN LIFE ASR.	1999/08/31	-51.78%
AFI	AFRICAN LIFE ASR.	1999/10/31	-66.37%
AFI	AFRICAN LIFE ASR.	1999/11/30	-66.28%
AFI	AFRICAN LIFE ASR.	1999/12/31	-72.09%
AFI	AFRICAN LIFE ASR.	2000/01/31	-66.75%
AFI	AFRICAN LIFE ASR.	2000/02/29	-60.01%
AFI	AFRICAN LIFE ASR.	2000/03/31	-62.53%
AFI	AFRICAN LIFE ASR.	2000/04/30	-50.80%
AFI	AFRICAN LIFE ASR.	2000/05/31	-54.03%
AFX	AFRICAN OXYGEN	1997/08/31	-58.83%
ATN	ALLIED ELECTRONICS	1996/01/31	-51.67%
ALT	ALLIED TECHNOLOGIES	1995/12/31	-50.83%
ALT	ALLIED TECHNOLOGIES	1996/01/31	-50.17%
AMA	AMALAPPC.	1997/09/30	-50.83%
AMA	AMALAPPC.	1997/11/30	-57.05%
AMA	AMALAPPC.	1998/01/31	-57.65%
AMA	AMALAPPC.	1998/02/28	-68.03%
AMA	AMALAPPC.	1998/03/31	-75.47%
AMA	AMALAPPC.	1998/04/30	-81.02%
AMA	AMALAPPC.	1998/05/31	-82.70%
AMA	AMALAPPC.	1998/05/30	-75.95%
AMA	AMALAPPC.	1998/07/31	-68.39%
AMA	AMALAPPC.	1999/12/31	-53.34%
AMS	ANGLO AMERICAN PLAT.	2002/03/31	-50.41%
AMS	ANGLO AMERICAN PLAT.	2002/04/30	-57.44%
ART	ARGENT INDUSTRIAL	1995/05/31	-54.26%
ART	ARGENT INDUSTRIAL	1995/08/31	-51.56%
ART	ARGENT INDUSTRIAL	1995/11/30	-53.41%
ART	ARGENT INDUSTRIAL	1995/12/31	-58.12%
ART	ARGENT INDUSTRIAL	1997/01/31	-59.64%
ART	ARGENT INDUSTRIAL	1997/02/28	-66.97%
ART	ARGENT INDUSTRIAL	1997/03/31	-59.33%
ART	ARGENT INDUSTRIAL	1997/05/31	-60.15%
ART	ARGENT INDUSTRIAL	1997/06/30	-67.03%
ART	ARGENT INDUSTRIAL	1997/07/31	-63.27%
ART	ARGENT INDUSTRIAL	1997/08/31	-71.66%
ART	ARGENT INDUSTRIAL	1997/09/30	-71.64%
ART	ARGENT INDUSTRIAL	1997/10/31	-67.02%
ART	ARGENT INDUSTRIAL	1997/12/31	-50.00%
ART	ARGENT INDUSTRIAL	1998/04/30	-55.24%
APN	ASPEN PHMCR.	1995/12/31	-52.96%
APN	ASPEN PHMCR.	1996/03/31	-69.06%
APN	ASPEN PHMCR.	1996/05/31	-60.32%
APN	ASPEN PHMCR.	1996/06/30	-57.87%
APN	ASPEN PHMCR.	1996/07/31	-67.99%
APN	ASPEN PHMCR.	1996/08/31	-61.82%
APN	ASPEN PHMCR.	1996/09/30	-59.18%
APN	ASPEN PHMCR.	1996/10/31	-50.00%
APN	ASPEN PHMCR	1997/01/31	-51.47%
APK	ASTRAPAK	1998/01/31	-54.64%
APK	ASTRAPAK	1998/02/28	-53.60%
AVI	AVI	1996/11/30	-60.54%
AVI	AVI	1996/12/31	-56.63%
AVI	AVI	1997/01/31	-53.95%
AVI	AVI	1997/03/31	-54.60%
AVI	AVI	1997/06/30	-60.11%
AVI	AVI	1997/07/31	-64.10%
AVI	AVI	1997/08/31	-67.50%
AVI	AVI	1997/09/30	-67.00%
AVI	AVI	1997/10/31	-53.59%
BAW	BARLOWORLD	1997/08/31	-56.65%
BAW	BARLOWORLD	1997/09/30	-57.31%
BJM	BARNARD JAC.MELLET	1999/06/30	-55.64%
BJM	BARNARD JAC.MELLET	1999/07/31	-59.34%
BJM	BARNARD JAC.MELLET	1999/08/31	-57.78%
BJM	BARNARD JAC.MELLET	1999/09/30	-52.55%
BJM	BARNARD JAC.MELLET	1999/10/31	-65.33%
BJM	BARNARD JAC.MELLET	1999/11/30	-70.38%
BJM	BARNARD JAC.MELLET	1999/12/31	-72.20%
BJM	BARNARD JAC.MELLET	2000/01/31	-59.59%
BJM	BARNARD JAC.MELLET	2000/02/29	-68.44%
BJM	BARNARD JAC.MELLET	2000/03/31	-73.19%
BJM	BARNARD JAC.MELLET	2000/04/30	-70.38%
BJM	BARNARD JAC.MELLET	2000/05/31	-60.41%
BPL	BARPLATS INVS.	1996/01/31	-51.92%
BPL	BARPLATS INVS.	1997/02/28	-52.94%
BPL	BARPLATS INVS.	2002/05/31	-51.63%
BPL	BARPLATS INVS.	2002/06/30	-58.39%
BPL	BARPLATS INVS.	2002/07/31	-52.46%
BPL	BARPLATS INVS.	2002/08/31	-58.67%
BPL	BARPLATS INVS.	2002/10/31	-59.80%
BPL	BARPLATS INVS.	2002/11/30	-77.09%
BPL	BARPLATS INVS.	2002/12/31	-77.97%
BPL	BARPLATS INVS.	2003/01/31	-73.53%
BRM	BEARING MAN	1997/04/30	-56.64%
BRM	BEARING MAN	1997/05/31	-56.02%
BRM	BEARING MAN	1997/06/30	-65.71%
BRM	BEARING MAN	1997/08/31	-64.09%
BRM	BEARING MAN	1997/11/30	-51.70%
BRM	BEARING MAN	1997/12/31	-61.06%
BRM	BEARING MAN	1998/01/31	-56.11%
BRM	BEARING MAN	1998/03/31	-56.07%
BEL	BELL EQUIPMENT	1997/01/31	-56.99%
BEL	BELL EQUIPMENT	1997/02/28	-63.62%
BEL	BELL EQUIPMENT	1997/03/31	-77.29%
BEL	BELL EQUIPMENT	1997/04/30	-58.04%
BEL	BELL EQUIPMENT	1997/05/31	-73.12%
BEL	BELL EQUIPMENT	1997/06/30	-81.14%
BEL	BELL EQUIPMENT	1997/07/31	-78.88%
BEL	BELL EQUIPMENT	1997/08/31	-77.65%
BEL	BELL EQUIPMENT	1997/09/30	-73.99%
BEL	BELL EQUIPMENT	1997/10/31	-70.60%
BEL	BELL EQUIPMENT	1997/11/30	-60.21%
BCF	BOWLER METCALF	1998/07/31	-52.53%
BCF	BOWLER METCALF	1998/09/30	-54.26%
BRC	BRANDCORP	1997/09/30	-56.53%
BRC	BRANDCORP	1998/02/28	-55.56%
BRC	BRANDCORP	1998/03/31	-58.03%
BRC	BRANDCORP	1998/04/30	-78.94%
BRC	BRANDCORP	1998/05/31	-78.69%
BRC	BRANDCORP	1998/06/30	-82.61%
BRC	BRANDCORP	1998/07/31	-74.00%
BRC	BRANDCORP	1998/08/31	-55.56%
BRC	BRANDCORP	1998/10/31	-57.05%
BRC	BRANDCORP	1998/11/30	-60.32%
BRN	BRIMSTONE INV.'N'	1998/07/31	-84.25%
BRN	BRIMSTONE INV.'N'	1998/08/31	-81.18%
BRN	BRIMSTONE INV.'N'	1998/09/30	-72.79%
BRN	BRIMSTONE INV.'N'	1998/10/31	-61.64%
BRN	BRIMSTONE INV.'N'	1998/11/30	-58.82%
BRN	BRIMSTONE INV.'N'	1998/12/31	-55.89%
BRN	BRIMSTONE INV.'N'	1999/01/31	-67.23%
BRN	BRIMSTONE INV.'N'	1999/02/28	-70.32%
BRN	BRIMSTONE INV.'N'	1999/03/31	-69.34%
BRN	BRIMSTONE INV.'N'	1999/04/30	-72.45%
BRN	BRIMSTONE INV.'N'	2000/07/31	-62.59%
BRN	BRIMSTONE INV.'N'	2000/08/30	-56.55%
BRN	BRIMSTONE INV.'N'	2000/10/31	-59.26%
BCX	BUSINESS CONNEXION GROUP	2001/09/30	-55.47%
BCX	BUSINESS CONNEXION GROUP	2001/10/31	-51.80%
BCX	BUSINESS CONNEXION GROUP	2001/12/31	-54.31%
BTG	BYTES TECH.GP.	1998/04/30	-63.76%
BTG	BYTES TECH.GP.	1998/05/31	-65.01%
BTG	BYTES TECH.GP.	1998/06/30	-73.20%
BTG	BYTES TECH.GP.	1998/07/31	-74.22%
BTG	BYTES TECH.GP.	1998/08/31	-50.07%
BTG	BYTES TECH.GP.	1998/09/30	-53.95%
BTG	BYTES TECH.GP.	1998/10/31	-78.38%
BTG	BYTES TECH.GP.	1998/11/30	-78.11%
BTG	BYTES TECH.GP.	1998/12/31	-77.37%
BTG	BYTES TECH.GP.	1999/01/31	-73.83%
BTG	BYTES TECH.GP.	1999/02/28	-75.88%
BTG	BYTES TECH.GP.	1999/03/31	-84.30%
BTG	BYTES TECH.GP.	1999/04/30	-86.29%
BTG	BYTES TECH.GP.	1999/05/31	-86.03%
BTG	BYTES TECH.GP.	1999/08/30	-84.17%
BTG	BYTES TECH.GP.	1999/07/31	-85.85%
BTG	BYTES TECH.GP.	1999/08/31	-87.32%
BTG	BYTES TECH.GP.	1999/09/30	-86.53%
BTG	BYTES TECH.GP.	1999/10/31	-88.50%
BTG	BYTES TECH.GP.	1999/11/30	-57.82%
BTG	BYTES TECH.GP.	1999/12/31	-65.48%
BTG	BYTES TECH.GP.	2000/01/31	-69.69%
BTG	BYTES TECH.GP.	2000/02/29	-67.34%
BTG	BYTES TECH.GP.	2000/03/31	-70.90%
BTG	BYTES TECH.GP.	2000/04/30	-65.80%
CDZ	CADIZ	1999/04/30	-51.88%
CDZ	CADIZ	1999/05/31	-55.71%
CDZ	CADIZ	1999/06/30	-52.80%
CDZ	CADIZ	1999/09/30	-50.40%
CDZ	CADIZ	1999/10/31	-66.19%
CDZ	CADIZ	1999/11/30	-58.16%
CDZ	CADIZ	1999/12/31	-68.54%
CDZ	CADIZ	2000/01/31	-57.05%
CDZ	CADIZ	2000/02/29	-62.23%
CDZ	CADIZ	2000/03/31	-63.54%
CDZ	CADIZ	2000/04/30	-52.43%
CDZ	CADIZ	2002/12/31	-93.42%
CDZ	CADIZ	2003/01/31	-93.31%
CDZ	CADIZ	2003/02/28	-93.81%
CDZ	CADIZ	2003/03/31	-93.45%
CDZ	CADIZ	2003/04/30	-93.67%
CDZ	CADIZ	2003/05/31	-93.02%
CDZ	CADIZ	2003/06/30	-93.02%
CDZ	CADIZ	2003/07/31	-94.12%
CDZ	CADIZ	2003/08/31	-93.73%
CDZ	CADIZ	2003/09/30	-93.88%
CDZ	CADIZ	2003/10/31	-94.46%
CDZ	CADIZ	2003/11/30	-93.13%
CRG	CARGO CARRIERS	1998/07/31	-54.53%
CSB	CASHBUILD	1995/01/31	-60.41%
CSB	CASHBUILD	1995/05/31	-60.00%
CSB	CASHBUILD	1995/06/30	-63.25%
CSB	CASHBUILD	1995/07/31	-68.38%
CSB	CASHBUILD	1998/02/28	-51.23%
CSB	CASHBUILD	1998/03/31	-58.25%
CSB	CASHBUILD	1999/11/30	-54.95%
CSB	CASHBUILD	1999/12/31	-62.25%
CSB	CASHBUILD	2000/01/31	-58.61%
CSB	CASHBUILD	2000/02/29	-51.28%
CSB	CASHBUILD	2000/03/31	-63.42%
CSB	CASHBUILD	2000/04/30	-60.49%
CLH	CITY LODGE HOTELS	1997/02/28	-51.39%
CLH	CITY LODGE HOTELS	1997/09/30	-69.94%
CLH	CITY LODGE HOTELS	1997/10/31	-52.69%
CLH	CITY LODGE HOTELS	1998/01/31	-60.05%
COM	COMAIR	2001/03/31	-51.41%
COM	COMAIR	2001/06/30	-51.69%
COM	COMAIR	2001/07/31	-51.13%
CMH	COMBINED MOTOR	1995/12/31	-53.11%
CMH	COMBINED MOTOR	1996/01/31	-57.57%
CMH	COMBINED MOTOR	1996/02/29	-50.96%
CMH	COMBINED MOTOR	1996/03/31	-54.17%
CNC	CONCOR	1997/07/31	-67.16%
CNC	CONCOR	1997/08/31	-65.02%
CNC	CONCOR	1997/09/30	-55.21%
CNC	CONCOR	1997/11/30	-60.43%
CNC	CONCOR	1997/12/31	-65.66%
CNC	CONCOR	1998/01/31	-68.96%
CNC	CONCOR	1998/02/28	-69.80%
CNC	CONCOR	1998/03/31	-63.90%
CNC	CONCOR	1998/05/31	-64.02%
CNC	CONCOR	1998/06/30	-68.83%
CNC	CONCOR	1998/07/31	-62.91%
CNC	CONCOR	1998/08/31	-61.84%
CNC	CONCOR	1998/10/31	-56.18%
CNC	CONCOR	1998/11/30	-62.50%
CNC	CONCOR	1998/12/31	-60.56%
CNC	CONCOR	2000/01/31	-68.32%
CNC	CONCOR	2000/02/29	-56.82%
CNC	CONCOR	2000/03/31	-57.50%
CNC	CONCOR	2000/04/30	-50.77%
CCT	CONNECTION GP.	1998/02/28	-56.75%
CCT	CONNECTION GP.	1998/03/31	-66.07%
CCT	CONNECTION GP.	1998/04/30	-83.11%
CCT	CONNECTION GP.	1998/05/31	-86.72%
CCT	CONNECTION GP.	1998/06/30	-93.00%
CCT	CONNECTION GP.	1998/07/31	-95.49%
CCT	CONNECTION GP.	1998/08/31	-91.14%
CCT	CONNECTION GP.	1998/09/30	-89.47%
CCT	CONNECTION GP.	1998/10/31	-93.00%
CCT	CONNECTION GP.	1998/11/30	-88.96%
CCT	CONNECTION GP.	1998/12/31	-84.54%

Appendix A.7. Sample Extreme Losers Sorted by Company

Continued.

Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return
CCT	CONNECTION GP.	1999/01/31	-81.66%	DGC	DIGICORE	1999/08/31	-53.99%	ELH	ELLERINE	1997/09/30	-63.93%
CCT	CONNECTION GP.	1999/02/28	-79.62%	DGC	DIGICORE	1999/12/31	-59.94%	ELH	ELLERINE	1997/10/31	-57.29%
CCT	CONNECTION GP.	1999/03/31	-58.86%	DGC	DIGICORE	2001/08/31	-52.27%	ELH	ELLERINE	1997/11/30	-58.58%
CNL	CONTROL INSTRUMENTS GP.	1996/05/31	-51.10%	DDT	DIMENSION DATA HDG.(JSE)	2000/07/31	-74.62%	ELH	ELLERINE	1997/12/31	-58.19%
CNL	CONTROL INSTRUMENTS GP.	1996/06/30	-61.06%	DDT	DIMENSION DATA HDG.(JSE)	2000/08/31	-79.41%	ELH	ELLERINE	1998/01/31	-58.22%
CNL	CONTROL INSTRUMENTS GP.	1996/07/31	-58.12%	DDT	DIMENSION DATA HDG.(JSE)	2000/09/30	-86.08%	ELH	ELLERINE	1998/02/28	-54.79%
CNL	CONTROL INSTRUMENTS GP.	1996/08/31	-62.03%	DDT	DIMENSION DATA HDG.(JSE)	2000/10/31	-84.26%	ELH	ELLERINE	1998/04/30	-52.25%
CNL	CONTROL INSTRUMENTS GP.	1996/09/30	-63.47%	DDT	DIMENSION DATA HDG.(JSE)	2000/11/30	-74.81%	EOH	ENTER.OUTSC.	1999/06/30	-51.52%
CNL	CONTROL INSTRUMENTS GP.	1996/10/31	-65.25%	DDT	DIMENSION DATA HDG.(JSE)	2000/12/31	-72.18%	EOH	ENTER.OUTSC.	2000/01/31	-54.71%
CNL	CONTROL INSTRUMENTS GP.	1996/11/30	-62.93%	DDT	DIMENSION DATA HDG.(JSE)	2001/01/31	-79.33%	EOH	ENTER.OUTSC.	2000/02/29	-50.38%
CNL	CONTROL INSTRUMENTS GP.	1996/12/31	-73.28%	DDT	DIMENSION DATA HDG.(JSE)	2001/02/28	-79.26%	EOH	ENTER.OUTSC.	2000/08/31	-62.83%
CNL	CONTROL INSTRUMENTS GP.	1997/01/31	-86.14%	DDT	DIMENSION DATA HDG.(JSE)	2001/03/31	-71.38%	EOH	ENTER.OUTSC.	2000/09/30	-60.59%
CNL	CONTROL INSTRUMENTS GP.	1997/02/28	-77.11%	DDT	DIMENSION DATA HDG.(JSE)	2001/04/30	-74.90%	ENV	ENVIROSERV	1997/01/31	-60.13%
CNL	CONTROL INSTRUMENTS GP.	1998/07/31	-53.81%	DDT	DIMENSION DATA HDG.(JSE)	2001/05/31	-78.54%	ENV	ENVIROSERV	1997/02/28	-76.28%
CNL	CONTROL INSTRUMENTS GP.	2000/03/31	-50.34%	DDT	DIMENSION DATA HDG.(JSE)	2001/06/30	-79.06%	ENV	ENVIROSERV	1997/03/31	-78.16%
CNL	CONTROL INSTRUMENTS GP.	2000/09/30	-50.01%	DDT	DIMENSION DATA HDG.(JSE)	2001/07/31	-71.63%	ENV	ENVIROSERV	1997/04/30	-74.02%
CNL	CONTROL INSTRUMENTS GP.	2000/12/31	-50.92%	DDT	DIMENSION DATA HDG.(JSE)	2001/08/31	-72.86%	ENV	ENVIROSERV	1997/05/31	-76.40%
CPA	CORPCAPITAL	1995/03/31	-76.61%	DDT	DIMENSION DATA HDG.(JSE)	2001/09/30	-69.89%	ENV	ENVIROSERV	1997/06/30	-77.02%
CPA	CORPCAPITAL	1996/06/30	-61.45%	DDT	DIMENSION DATA HDG.(JSE)	2001/10/31	-65.36%	ENV	ENVIROSERV	1997/07/31	-77.55%
CPA	CORPCAPITAL	1999/07/31	-51.77%	DDT	DIMENSION DATA HDG.(JSE)	2001/11/30	-71.32%	ENV	ENVIROSERV	1997/08/31	-80.23%
CPA	CORPCAPITAL	1999/08/31	-52.22%	DDT	DIMENSION DATA HDG.(JSE)	2001/12/31	-73.36%	ENV	ENVIROSERV	1997/09/30	-86.65%
CKS	CROOKES BROTHERS	1997/09/30	-56.19%	DDT	DIMENSION DATA HDG.(JSE)	2002/01/31	-71.77%	ENV	ENVIROSERV	1997/10/31	-78.64%
CKS	CROOKES BROTHERS	1997/10/31	-58.18%	DDT	DIMENSION DATA HDG.(JSE)	2002/02/28	-73.10%	ENV	ENVIROSERV	1997/11/30	-69.37%
CKS	CROOKES BROTHERS	1997/11/30	-51.66%	DDT	DIMENSION DATA HDG.(JSE)	2002/03/31	-79.89%	ENV	ENVIROSERV	1997/12/31	-66.63%
CUL	CULLINAN	1995/10/31	-50.94%	DDT	DIMENSION DATA HDG.(JSE)	2002/04/30	-80.75%	ENV	ENVIROSERV	1998/01/31	-62.93%
CUL	CULLINAN	1995/11/30	-61.07%	DDT	DIMENSION DATA HDG.(JSE)	2002/05/31	-58.54%	ERP	ERP.COM	1999/09/30	-61.00%
CUL	CULLINAN	1995/12/31	-59.99%	DDT	DIMENSION DATA HDG.(JSE)	2002/06/30	-58.92%	ERP	ERP.COM	1999/10/31	-61.90%
CUL	CULLINAN	1996/01/31	-70.52%	DST	DISTELL GROUP	1997/06/30	-53.33%	ERP	ERP.COM	1999/11/30	-70.00%
CUL	CULLINAN	1996/02/29	-76.25%	DST	DISTELL GROUP	1997/07/31	-59.36%	ERP	ERP.COM	1999/12/31	-70.00%
CUL	CULLINAN	1996/03/31	-86.36%	DST	DISTELL GROUP	1997/08/31	-61.07%	ERP	ERP.COM	2000/01/31	-82.86%
CUL	CULLINAN	1996/04/30	-82.91%	DST	DISTELL GROUP	1997/09/30	-58.87%	ERP	ERP.COM	2000/02/29	-76.70%
CUL	CULLINAN	1996/05/31	-82.00%	DST	DISTELL GROUP	1997/10/31	-61.70%	ERP	ERP.COM	2000/03/31	-90.00%
CUL	CULLINAN	1996/06/30	-76.81%	DST	DISTELL GROUP	1997/11/30	-63.27%	ERP	ERP.COM	2000/04/30	-80.00%
CUL	CULLINAN	1996/07/31	-73.11%	DST	DISTELL GROUP	1997/12/31	-60.01%	ERP	ERP.COM	2000/05/31	-77.50%
CUL	CULLINAN	1996/08/31	-69.54%	DST	DISTELL GROUP	1998/01/31	-58.49%	ERP	ERP.COM	2000/06/30	-77.50%
CUL	CULLINAN	1996/09/30	-68.01%	DST	DISTELL GROUP	1998/02/28	-58.69%	ERP	ERP.COM	2000/10/31	-50.00%
CUL	CULLINAN	1996/10/31	-84.78%	DLV	DORBYL	1997/01/31	-53.58%	EXL	EXCELLERATE HDG.	1998/05/31	-69.58%
CUL	CULLINAN	1996/11/30	-78.77%	DLV	DORBYL	1997/07/31	-58.24%	EXL	EXCELLERATE HDG.	1998/06/30	-70.01%
CUL	CULLINAN	1996/12/31	-79.27%	DLV	DORBYL	1997/08/31	-75.14%	EXL	EXCELLERATE HDG.	1998/07/31	-66.67%
CUL	CULLINAN	1997/01/31	-73.24%	DLV	DORBYL	1997/09/30	-72.90%	EXL	EXCELLERATE HDG.	1998/08/31	-60.00%
CUL	CULLINAN	1997/02/28	-68.45%	DLV	DORBYL	1997/10/31	-67.26%	EXL	EXCELLERATE HDG.	2002/01/31	-50.12%
CUL	CULLINAN	1997/04/30	-58.51%	DLV	DORBYL	1997/11/30	-62.69%	EXL	EXCELLERATE HDG.	2002/04/30	-50.00%
CUL	CULLINAN	1997/08/31	-55.26%	DLV	DORBYL	1997/12/31	-55.72%	EXL	EXCELLERATE HDG.	2002/05/31	-50.12%
CUL	CULLINAN	1998/05/31	-65.50%	DRD	DRD GOLD	1996/05/31	-56.57%	EXL	EXCELLERATE HDG.	2002/06/30	-71.86%
CUL	CULLINAN	1998/06/30	-60.45%	DRD	DRD GOLD	1996/06/30	-55.77%	EXL	EXCELLERATE HDG.	2002/07/31	-63.10%
CUL	CULLINAN	1998/07/31	-68.11%	DRD	DRD GOLD	1996/07/31	-74.88%	EXL	EXCELLERATE HDG.	2002/08/31	-71.43%
CUL	CULLINAN	1998/08/31	-66.74%	DRD	DRD GOLD	1996/08/31	-64.97%	EXL	EXCELLERATE HDG.	2002/09/30	-52.15%
CUL	CULLINAN	1998/09/30	-72.09%	DRD	DRD GOLD	1996/09/30	-72.32%	EXL	EXCELLERATE HDG.	2002/10/31	-61.11%
CUL	CULLINAN	1998/10/31	-72.43%	DRD	DRD GOLD	1996/10/31	-78.76%	FBR	FAMOUS BRANDS	1997/08/31	-60.28%
CUL	CULLINAN	1998/11/30	-61.94%	DRD	DRD GOLD	1996/11/30	-81.02%	FOS	FOSCHINI	1996/01/31	-50.30%
CUL	CULLINAN	1998/12/31	-68.21%	DRD	DRD GOLD	1996/12/31	-80.00%	FOS	FOSCHINI	1997/08/31	-55.83%
CUL	CULLINAN	1999/01/31	-81.36%	DRD	DRD GOLD	1997/01/31	-56.06%	FOS	FOSCHINI	1997/09/30	-51.34%
CUL	CULLINAN	1999/02/28	-82.08%	DRD	DRD GOLD	1997/02/28	-70.13%	FOS	FOSCHINI	1997/12/31	-51.87%
CUL	CULLINAN	1999/03/31	-73.11%	DRD	DRD GOLD	1997/03/31	-67.45%	FOS	FOSCHINI	1999/11/30	-50.65%
CUL	CULLINAN	1999/04/30	-77.89%	DRD	DRD GOLD	1999/11/30	-59.81%	FOS	FOSCHINI	1999/12/31	-60.22%
CUL	CULLINAN	1999/05/31	-74.92%	DRD	DRD GOLD	2002/04/30	-62.98%	FOS	FOSCHINI	2000/01/31	-61.53%
CUL	CULLINAN	1999/06/30	-73.57%	DRD	DRD GOLD	2002/05/31	-60.02%	FOS	FOSCHINI	2000/02/29	-56.87%
CUL	CULLINAN	1999/07/31	-66.52%	DRD	DRD GOLD	2002/06/30	-55.10%	FOS	FOSCHINI	2000/03/31	-62.46%
DCT	DATACENTRIX	1999/04/30	-50.00%	DRD	DRD GOLD	2002/08/31	-52.04%	FOS	FOSCHINI	2000/04/30	-53.53%
DCT	DATACENTRIX	1999/05/31	-54.59%	DRD	DRD GOLD	2002/09/30	-54.99%	FRO	FRONTRANGE SLTN.	1999/10/31	-55.17%
DCT	DATACENTRIX	1999/06/30	-52.38%	DRD	DRD GOLD	2003/12/31	-60.19%	FRO	FRONTRANGE SLTN.	1999/11/30	-72.12%
DCT	DATACENTRIX	1999/09/30	-50.00%	DAW	DS.& WHSG.NETWORK	1995/11/30	-51.24%	FRO	FRONTRANGE SLTN.	1999/12/31	-84.23%
DCT	DATACENTRIX	1999/10/31	-53.50%	DAW	DS.& WHSG.NETWORK	1995/12/31	-60.00%	FRO	FRONTRANGE SLTN.	2000/01/31	-90.96%
DCT	DATACENTRIX	1999/11/30	-57.73%	DAW	DS.& WHSG.NETWORK	1996/01/31	-53.92%	FRO	FRONTRANGE SLTN.	2000/02/29	-95.61%
DCT	DATACENTRIX	1999/12/31	-69.71%	DAW	DS.& WHSG.NETWORK	1996/02/29	-65.52%	FRO	FRONTRANGE SLTN.	2000/03/31	-93.59%
DCT	DATACENTRIX	2000/01/31	-65.64%	DAW	DS.& WHSG.NETWORK	1996/03/31	-68.00%	FRO	FRONTRANGE SLTN.	2000/04/30	-90.98%
DCT	DATACENTRIX	2000/02/29	-55.00%	DAW	DS.& WHSG.NETWORK	1996/04/30	-69.56%	FRO	FRONTRANGE SLTN.	2000/05/31	-88.89%
DCT	DATACENTRIX	2000/03/31	-61.35%	DAW	DS.& WHSG.NETWORK	1996/05/31	-68.00%	FRO	FRONTRANGE SLTN.	2000/06/30	-88.45%
DTC	DATATEC	1999/04/30	-50.00%	DAW	DS.& WHSG.NETWORK	1996/06/30	-72.23%	FRO	FRONTRANGE SLTN.	2000/07/31	-88.95%
DTC	DATATEC	1999/11/30	-57.20%	DAW	DS.& WHSG.NETWORK	1996/07/31	-79.72%	FRO	FRONTRANGE SLTN.	2000/08/31	-87.03%
DTC	DATATEC	1999/12/31	-68.85%	DAW	DS.& WHSG.NETWORK	1996/08/31	-68.84%	FRO	FRONTRANGE SLTN.	2000/09/30	-94.11%
DTC	DATATEC	2000/01/31	-80.25%	DAW	DS.& WHSG.NETWORK	1996/09/30	-81.84%	FRO	FRONTRANGE SLTN.	2000/10/31	-90.62%
DTC	DATATEC	2000/02/29	-83.23%	DAW	DS.& WHSG.NETWORK	1996/10/31	-79.81%	FRO	FRONTRANGE SLTN.	2000/11/30	-71.09%
DTC	DATATEC	2000/03/31	-85.78%	DAW	DS.& WHSG.NETWORK	1996/11/30	-77.26%	FRO	FRONTRANGE SLTN.	2000/12/31	-74.39%
DTC	DATATEC	2000/04/30	-73.43%	DAW	DS.& WHSG.NETWORK	1996/12/31	-70.00%	FRO	FRONTRANGE SLTN.	2001/01/31	-87.28%
DTC	DATATEC	2000/05/31	-52.55%	DAW	DS.& WHSG.NETWORK	1997/01/31	-79.23%	FRO	FRONTRANGE SLTN.	2001/02/28	-77.64%
DTC	DATATEC	2000/06/30	-53.42%	DAW	DS.& WHSG.NETWORK	1997/02/28	-85.02%	FRO	FRONTRANGE SLTN.	2001/03/31	-63.64%
DTC	DATATEC	2000/07/31	-70.02%	ECO	EDGARS CONS.STORES	1997/06/30	-54.32%	GIJ	GIJIMA AST GROUP	2001/02/28	-57.23%
DTC	DATATEC	2000/08/31	-76.11%	ECO	EDGARS CONS.STORES	1997/07/31	-75.67%	GIJ	GIJIMA AST GROUP	2001/03/31	-58.53%
DTC	DATATEC	2000/09/30	-80.64%	ECO	EDGARS CONS.STORES	1997/08/31	-82.10%	GIJ	GIJIMA AST GROUP	2001/04/30	-57.98%
DTC	DATATEC	2000/10/31	-80.04%	ECO	EDGARS CONS.STORES	1997/09/30	-84.15%	GIJ	GIJIMA AST GROUP	2001/05/31	-53.65%
DTC	DATATEC	2000/11/30	-58.83%	ECO	EDGARS CONS.STORES	1997/10/31	-76.16%	GIJ	GIJIMA AST GROUP	2001/06/30	-66.02%
DTC	DATATEC	2001/01/31	-55.42%	ECO	EDGARS CONS.STORES	1997/11/30	-76.21%	GIJ	GIJIMA AST GROUP	2001/07/31	-72.81%
DTC	DATATEC	2001/08/31	-53.33%	ECO	EDGARS CONS.STORES	1997/12/31	-77.95%	GIJ	GIJIMA AST GROUP	2001/08/31	-78.45%
DTC	DATATEC	2001/12/31	-66.75%	ECO	EDGARS CONS.STORES	1998/01/31	-71.19%	GIJ	GIJIMA AST GROUP	2001/09/30	-79.99%
DTC	DATATEC	2002/01/31	-67.62%	ECO	EDGARS CONS.STORES	1998/02/28	-65.55%	GIJ	GIJIMA AST GROUP	2001/10/31	-84.99%
DTC	DATATEC	2002/02/28	-71.74%	ECO	EDGARS CONS.STORES	1998/03/31	-61.52%	GIJ	GIJIMA AST GROUP	2001/11/30	-88.29%
DTC	DATATEC	2002/03/31	-77.27%	ECO	EDGARS CONS.STORES	1998/04/30	-63.89%	GIJ	GIJIMA AST GROUP	2001/12/31	-88.29%
DTC	DATATEC	2002/04/30	-75.56%	ECO	EDGARS CONS.STORES	1999/10/31	-52.69%	GIJ	GIJIMA AST GROUP	2002/01/31	-89.48%
DTC	DATATEC	2002/05/31	-66.19%	ECO	EDGARS CONS.STORES	1999/11/30	-65.38%	GIJ	GIJIMA AST GROUP	2002/02/28	-87.29%
DTC	DATATEC	2002/06/30	-58.53%	ECO	EDGARS CONS.STORES	1999/12/31	-67.67%	GIJ	GIJIMA AST GROUP	2002/03/31	-89.64%
DGC	DIGICORE	1999/01/31	-53.57%	ECO	EDGARS CONS.STORES	2000/01/31	-63.86%	GIJ	GIJIMA AST GROUP	2002/04/30	-91.45%
DGC	DIGICORE	1999/02/28	-62.47%	ECO	EDGARS CONS.STORES	2000/02/29	-65.13%	GIJ	GIJIMA AST GROUP	2002/05/31	-87.10%
DGC	DIGICORE	1999/03/31	-52.84%	ECO	EDGARS CONS.STORES	2000/03/31	-69.74%	GIJ	GIJIMA AST GROUP	2002/06/30	-81.23%
DGC	DIGICORE	1999/04/30	-61.06%	ECO	EDGARS CONS.STORES	2000/04/30	-64.60%	GIJ	GIJIMA AST GROUP	2002/07/31	-78.90%
DGC	DIGICORE	1999/05/31	-65.67%	ECO	EDGARS CONS.STORES	2000/05/31	-58.34%	GIJ	GIJIMA AST GROUP	2002/08/31	-78.47%
DGC	DIGICORE	1999/06/30	-59.97%	ECO	EDGARS CONS.STORES	2000/06/30	-53.78%	GIJ	GIJIMA AST GROUP	2002/09/30	-67.26%
DGC	DIGICORE	1999/07/31	-55.35%	ELH	ELLERINE	1997/08/31	-65.43%	GIJ	GIJIMA AST GROUP	2002/11/30	-50.25%

Appendix A.7. Sample Extreme Losers Sorted by Company

Continued.

Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return
GIJ	GIJIMA AST GROUP	2003/10/31	-51.05%	INM	INMINS	1995/02/28	-55.52%	KAP	KAP INTL.	1998/02/28	-60.00%
GDF	GOLD REEF CNO.RSTS.	1999/03/31	-53.64%	INM	INMINS	1995/03/31	-57.10%	KAP	KAP INTL.	1998/03/31	-50.00%
GDH	GOOD HOPE DIAMONDS	1995/01/31	-74.78%	INM	INMINS	1997/07/31	-59.95%	KAP	KAP INTL.	1998/04/30	-51.67%
GDH	GOOD HOPE DIAMONDS	1995/02/28	-70.60%	INM	INMINS	1997/08/31	-67.60%	KAP	KAP INTL.	1998/02/28	-54.55%
GDH	GOOD HOPE DIAMONDS	1995/05/31	-50.02%	INM	INMINS	1997/09/30	-68.50%	KAP	KAP INTL.	1999/03/31	-50.00%
GDH	GOOD HOPE DIAMONDS	1995/06/30	-65.00%	INM	INMINS	1997/10/31	-52.74%	KAP	KAP INTL.	1998/04/30	-55.17%
GDH	GOOD HOPE DIAMONDS	1995/07/31	-58.84%	INM	INMINS	1997/11/30	-62.64%	KAP	KAP INTL.	1999/12/31	-55.56%
GDH	GOOD HOPE DIAMONDS	1995/08/31	-66.64%	INM	INMINS	1998/03/31	-50.15%	KAP	KAP INTL.	2000/03/31	-51.52%
GDH	GOOD HOPE DIAMONDS	1995/09/30	-59.99%	IVT	INVICTA	1997/07/31	-54.11%	KAP	KAP INTL.	2000/06/30	-56.90%
GDH	GOOD HOPE DIAMONDS	1998/03/31	-55.50%	IVT	INVICTA	1997/08/31	-72.10%	KAP	KAP INTL.	2000/08/31	-54.29%
GDH	GOOD HOPE DIAMONDS	1998/05/31	-66.70%	IVT	INVICTA	1997/09/30	-73.69%	KAP	KAP INTL.	2001/07/31	-58.06%
GDH	GOOD HOPE DIAMONDS	1998/06/30	-65.73%	IVT	INVICTA	1997/10/31	-67.67%	KAP	KAP INTL.	2001/11/30	-58.06%
GDH	GOOD HOPE DIAMONDS	1998/07/31	-68.88%	IVT	INVICTA	1997/11/30	-74.10%	KAP	KAP INTL.	2002/12/31	-50.00%
GDH	GOOD HOPE DIAMONDS	1998/08/31	-68.88%	IVT	INVICTA	1997/12/31	-72.65%	KAP	KAP INTL.	2003/01/31	-65.22%
GDH	GOOD HOPE DIAMONDS	1998/09/30	-82.50%	IVT	INVICTA	1998/01/31	-69.17%	KAP	KAP INTL.	2003/05/31	-50.00%
GDH	GOOD HOPE DIAMONDS	1998/10/31	-77.48%	IVT	INVICTA	1998/02/28	-69.68%	KAP	KAP INTL.	2003/06/30	-57.14%
GDH	GOOD HOPE DIAMONDS	1998/11/30	-83.90%	IVT	INVICTA	1998/03/31	-66.76%	KAP	KAP INTL.	2003/10/31	-54.55%
GDH	GOOD HOPE DIAMONDS	1998/12/31	-82.47%	IVT	INVICTA	1998/04/30	-61.09%	KWV	KWV BELEGGINGS BPK.	1997/06/30	-55.33%
GDH	GOOD HOPE DIAMONDS	1999/01/31	-83.73%	IVT	INVICTA	1998/05/31	-56.90%	KWV	KWV BELEGGINGS BPK.	1997/08/31	-58.71%
GDH	GOOD HOPE DIAMONDS	1999/02/28	-88.06%	JSC	JASCO ELTN.	1998/07/31	-67.93%	KWV	KWV BELEGGINGS BPK.	1997/09/30	-85.61%
GDH	GOOD HOPE DIAMONDS	1999/03/31	-85.09%	JSC	JASCO ELTN.	1998/09/30	-62.83%	KWV	KWV BELEGGINGS BPK.	1997/10/31	-61.67%
GDH	GOOD HOPE DIAMONDS	1999/04/30	-91.63%	JSC	JASCO ELTN.	1998/10/31	-86.93%	KWV	KWV BELEGGINGS BPK.	1997/11/30	-82.04%
GDH	GOOD HOPE DIAMONDS	1999/05/31	-73.20%	JSC	JASCO ELTN.	1998/11/30	-77.37%	KWV	KWV BELEGGINGS BPK.	1998/02/28	-54.07%
GDH	GOOD HOPE DIAMONDS	1999/06/30	-75.10%	JSC	JASCO ELTN.	1998/12/31	-70.13%	LAR	LA GROUP	1999/05/31	-77.62%
GDH	GOOD HOPE DIAMONDS	1999/07/31	-71.33%	JSC	JASCO ELTN.	1999/01/31	-73.70%	LAR	LA GROUP	1999/06/30	-79.14%
GDH	GOOD HOPE DIAMONDS	1999/08/31	-78.67%	JSC	JASCO ELTN.	1999/02/28	-81.84%	LAR	LA GROUP	1999/07/31	-76.77%
GDH	GOOD HOPE DIAMONDS	1999/10/31	-55.43%	JSC	JASCO ELTN.	1999/03/31	-81.02%	LAR	LA GROUP	1999/08/31	-86.40%
GDH	GOOD HOPE DIAMONDS	1999/11/30	-59.80%	JSC	JASCO ELTN.	1999/04/30	-83.36%	LAR	LA GROUP	1999/09/30	-76.42%
GDH	GOOD HOPE DIAMONDS	1999/12/31	-59.80%	JSC	JASCO ELTN.	1999/05/31	-88.89%	LAR	LA GROUP	1999/10/31	-79.04%
GDH	GOOD HOPE DIAMONDS	2000/01/31	-50.41%	JSC	JASCO ELTN.	1999/06/30	-89.85%	LAR	LA GROUP	1999/11/30	-77.12%
GND	GRINDROD	1996/04/30	-61.95%	JSC	JASCO ELTN.	1999/07/31	-79.38%	LAR	LA GROUP	1999/12/31	-84.00%
GND	GRINDROD	1996/05/31	-59.55%	JSC	JASCO ELTN.	1999/08/31	-73.53%	LAR	LA GROUP	2000/01/31	-83.04%
GND	GRINDROD	1996/06/30	-63.86%	JSC	JASCO ELTN.	1999/09/30	-55.63%	LAR	LA GROUP	2000/02/29	-84.00%
GND	GRINDROD	1996/11/30	-53.62%	JSC	JASCO ELTN.	1999/10/31	-81.82%	LAR	LA GROUP	2000/03/31	-74.26%
GND	GRINDROD	1996/12/31	-51.64%	JSC	JASCO ELTN.	1999/11/30	-71.61%	LAR	LA GROUP	2000/04/30	-72.41%
GND	GRINDROD	1997/01/31	-54.36%	JSC	JASCO ELTN.	1999/12/31	-77.37%	LAN	LA GROUP 'N'	1999/05/31	-72.61%
GND	GRINDROD	1997/02/28	-54.80%	JSC	JASCO ELTN.	2000/01/31	-74.85%	LAN	LA GROUP 'N'	1999/06/30	-75.70%
GND	GRINDROD	1997/03/31	-55.21%	JSC	JASCO ELTN.	2000/02/29	-80.74%	LAN	LA GROUP 'N'	1999/07/31	-75.51%
GRF	GROUP FIVE	1997/02/28	-83.53%	JSC	JASCO ELTN.	2000/03/31	-80.77%	LAN	LA GROUP 'N'	1999/08/31	-83.53%
GRF	GROUP FIVE	1997/03/31	-85.99%	JSC	JASCO ELTN.	2000/04/30	-84.75%	LAN	LA GROUP 'N'	1999/09/30	-75.22%
GRF	GROUP FIVE	1997/04/30	-54.26%	JSC	JASCO ELTN.	2000/05/31	-62.49%	LAN	LA GROUP 'N'	1999/10/31	-79.18%
GRF	GROUP FIVE	1997/06/30	-55.40%	JSC	JASCO ELTN.	2000/07/31	-51.52%	LAN	LA GROUP 'N'	1999/11/30	-80.57%
GRF	GROUP FIVE	1997/07/31	-65.68%	JSC	JASCO ELTN.	2000/08/31	-54.44%	LAN	LA GROUP 'N'	1999/12/31	-84.72%
GRF	GROUP FIVE	1997/08/31	-75.74%	JSC	JASCO ELTN.	2000/09/30	-53.51%	LAN	LA GROUP 'N'	2000/01/31	-84.04%
GRF	GROUP FIVE	1997/09/30	-72.28%	JCD	JCI	1996/10/31	-50.49%	LAN	LA GROUP 'N'	2000/02/29	-83.68%
GRF	GROUP FIVE	1997/10/31	-62.04%	JCD	JCI	1996/11/30	-69.97%	LAN	LA GROUP 'N'	2000/03/31	-76.03%
GRF	GROUP FIVE	1997/11/30	-64.97%	JCD	JCI	1996/12/31	-67.57%	LAN	LA GROUP 'N'	2000/04/30	-73.36%
GRF	GROUP FIVE	1997/12/31	-59.16%	JCD	JCI	1997/01/31	-62.64%	LGL	LIBERTY GROUP	1998/03/31	-52.27%
GRF	GROUP FIVE	1998/01/31	-66.41%	JCD	JCI	1997/02/28	-62.95%	LON	LONMIN (JSE)	2002/03/31	-54.05%
HAR	HARMONY GOLD MNG.	1996/07/31	-51.11%	JCD	JCI	1997/03/31	-69.36%	LON	LONMIN (JSE)	2002/04/30	-53.18%
HAR	HARMONY GOLD MNG.	1996/10/31	-53.86%	JCD	JCI	1997/04/30	-59.85%	MCU	M CUBED HOLDINGS	2001/09/30	-50.73%
HAR	HARMONY GOLD MNG.	1996/11/30	-66.92%	JCD	JCI	1997/05/31	-72.47%	MCU	M CUBED HOLDINGS	2001/12/31	-53.43%
HAR	HARMONY GOLD MNG.	1996/12/31	-69.27%	JCD	JCI	1997/06/30	-74.51%	MCU	M CUBED HOLDINGS	2002/01/31	-57.98%
HAR	HARMONY GOLD MNG.	1997/01/31	-57.63%	JCD	JCI	1997/07/31	-79.00%	MCU	M CUBED HOLDINGS	2002/02/28	-56.96%
HAR	HARMONY GOLD MNG.	1997/02/28	-57.22%	JCD	JCI	1997/08/31	-80.89%	MCU	M CUBED HOLDINGS	2002/03/31	-50.86%
HAR	HARMONY GOLD MNG.	1997/03/31	-52.09%	JCD	JCI	1997/09/30	-68.64%	MCU	M CUBED HOLDINGS	2002/04/30	-56.11%
HAR	HARMONY GOLD MNG.	2003/12/31	-52.47%	JCD	JCI	1997/10/31	-62.67%	MCU	M CUBED HOLDINGS	2002/05/31	-59.45%
HCI	HOSKEN CONS.INV.	2000/07/31	-53.77%	JCD	JCI	1998/01/31	-55.35%	MDC	MEDI CLINIC	1997/08/31	-56.70%
HCI	HOSKEN CONS.INV.	2000/09/30	-51.84%	JCD	JCI	1998/02/28	-53.69%	MDC	MEDI CLINIC	1997/09/30	-58.58%
HCI	HOSKEN CONS.INV.	2001/01/31	-53.56%	JCD	JCI	1999/04/30	-55.47%	MDC	MEDI CLINIC	1998/05/31	-55.44%
HWN	HOWDEN AFRICA	1997/06/30	-50.77%	JCD	JCI	1999/08/31	-63.26%	MRF	MERAFE RESOURCES	1998/05/31	-65.58%
HWN	HOWDEN AFRICA	1997/07/31	-65.66%	JCD	JCI	1999/09/30	-67.94%	MTL	MERCANTILE BANK	1999/02/28	-55.56%
HWN	HOWDEN AFRICA	1997/08/31	-72.96%	JCD	JCI	1999/11/30	-50.00%	MTL	MERCANTILE BANK	1999/03/31	-58.58%
HWN	HOWDEN AFRICA	1997/09/30	-67.95%	JCD	JCI	1999/12/31	-51.78%	MTL	MERCANTILE BANK	1999/04/30	-63.16%
HWN	HOWDEN AFRICA	1997/10/31	-81.82%	JCD	JCI	2003/09/30	-54.95%	MTL	MERCANTILE BANK	1999/05/31	-70.22%
HWN	HOWDEN AFRICA	1997/11/30	-81.12%	JCD	JCI	2003/10/31	-59.39%	MTL	MERCANTILE BANK	1999/06/30	-69.24%
HWN	HOWDEN AFRICA	1997/12/31	-75.46%	JCD	JCI	2003/11/30	-56.15%	MTL	MERCANTILE BANK	1999/07/31	-70.22%
HWN	HOWDEN AFRICA	1998/01/31	-74.80%	JCD	JCI	2003/12/31	-65.64%	MTL	MERCANTILE BANK	1999/08/31	-70.32%
HWN	HOWDEN AFRICA	1998/02/28	-68.18%	JDG	JD GROUP	2001/02/28	-56.92%	MTL	MERCANTILE BANK	1999/09/30	-69.27%
HWN	HOWDEN AFRICA	1998/03/31	-63.93%	JDG	JD GROUP	2001/03/31	-55.42%	MTL	MERCANTILE BANK	1999/10/31	-72.51%
HDC	HUDACO	1997/06/30	-53.45%	JDG	JD GROUP	2001/05/31	-51.04%	MTL	MERCANTILE BANK	1999/11/30	-69.16%
HDC	HUDACO	1997/07/31	-64.14%	JDG	JD GROUP	2001/08/30	-52.61%	MTL	MERCANTILE BANK	1999/12/31	-60.14%
HDC	HUDACO	1997/08/31	-75.46%	JDG	JD GROUP	2001/07/31	-50.41%	MTL	MERCANTILE BANK	2000/01/31	-62.24%
HDC	HUDACO	1997/09/30	-76.25%	JDG	JD GROUP	2001/08/31	-57.48%	MTL	MERCANTILE BANK	2000/02/29	-65.15%
HDC	HUDACO	1997/10/31	-70.57%	JDG	JD GROUP	2001/09/30	-52.92%	MTL	MERCANTILE BANK	2000/03/31	-64.54%
HDC	HUDACO	1997/11/30	-64.30%	JNC	JOHNNIC	1997/09/30	-57.72%	MTL	MERCANTILE BANK	2001/03/31	-53.93%
HDC	HUDACO	1997/12/31	-63.16%	JNC	JOHNNIC	2000/07/31	-51.77%	MTL	MERCANTILE BANK	2001/04/30	-64.57%
HDC	HUDACO	1998/01/31	-59.96%	JNC	JOHNNIC	2000/09/30	-50.39%	MTL	MERCANTILE BANK	2001/05/31	-79.72%
HDC	HUDACO	1998/02/28	-62.83%	KGM	KAGISO MEDIA	1998/05/31	-59.28%	MTL	MERCANTILE BANK	2001/06/30	-76.85%
HDC	HUDACO	1998/03/31	-56.45%	KGM	KAGISO MEDIA	1998/06/30	-64.82%	MTL	MERCANTILE BANK	2001/07/31	-64.04%
IDI	IDION TECH.	1999/12/31	-50.00%	KGM	KAGISO MEDIA	1998/07/31	-53.33%	MTL	MERCANTILE BANK	2001/08/31	-76.61%
IDI	IDION TECH.	2000/01/31	-62.58%	KAP	KAP INTL.	1995/10/31	-52.39%	MTL	MERCANTILE BANK	2001/09/30	-71.57%
IDI	IDION TECH.	2000/02/29	-76.47%	KAP	KAP INTL.	1996/07/31	-51.74%	MTL	MERCANTILE BANK	2001/10/31	-73.68%
IDI	IDION TECH.	2000/03/31	-90.97%	KAP	KAP INTL.	1996/10/31	-52.76%	MTL	MERCANTILE BANK	2001/11/30	-61.45%
IDI	IDION TECH.	2000/04/30	-73.49%	KAP	KAP INTL.	1996/11/30	-63.80%	MES	MESSINA	2002/06/30	-51.61%
IDI	IDION TECH.	2000/05/31	-82.22%	KAP	KAP INTL.	1996/12/31	-74.21%	MES	MESSINA	2003/09/30	-54.66%
IDI	IDION TECH.	2000/06/30	-89.47%	KAP	KAP INTL.	1997/01/31	-84.68%	MES	MESSINA	2003/10/31	-57.81%
IDI	IDION TECH.	2000/07/31	-94.15%	KAP	KAP INTL.	1997/02/28	-67.65%	MES	MESSINA	2003/11/30	-58.06%
IDI	IDION TECH.	2000/08/31	-93.47%	KAP	KAP INTL.	1997/03/31	-73.28%	MES	MESSINA	2003/12/31	-61.29%
IDI	IDION TECH.	2000/09/30	-95.47%	KAP	KAP INTL.	1997/04/30	-73.03%	MTX	METOREX	1996/06/30	-66.17%
IDI	IDION TECH.	2000/10/31	-95.53%	KAP	KAP INTL.	1997/05/31	-80.59%	MTX	METOREX	1996/07/31	-64.12%
IDI	IDION TECH.	2000/11/30	-90.98%	KAP	KAP INTL.	1997/06/30	-81.78%	MTX	METOREX	1996/08/31	-86.65%
IDI	IDION TECH.	2000/12/31	-87.73%	KAP	KAP INTL.	1997/07/31	-79.47%	MTX	METOREX	1996/09/30	-76.12%
IDI	IDION TECH.	2001/01/31	-93.84%	KAP	KAP INTL.	1997/08/31	-86.02%	MTX	METOREX	1996/10/31	-73.36%
IDI	IDION TECH.	2001/02/28	-88.52%	KAP	KAP INTL.	1997/09/30	-85.26%	MTX	METOREX	1996/11/30	-67.61%
ILA	ILIAD AFRICA	1998/06/30	-50.99%	KAP	KAP INTL.	1997/10/31	-78.79%	MTX	METOREX	1996/12/31	-72.99%
ILA	ILIAD AFRICA	1998/07/31	-52.00%	KAP	KAP INTL.	1997/11/30	-80.34%	MTX	METOREX	1997/01/31	-52.20%
INM	INMINS	1995/01/31	-61.99%	KAP	KAP INTL.	1997/12/31	-62.30%	MTX	METOREX	1997/02/28	-63.37%

Appendix A.7. Sample Extreme Losers Sorted by Company

Continued.

Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return
MMG	MICROMEGA HDG.	2000/02/29	-51.91%	NPN	NASPERS	1997/08/31	-51.68%	PIM	PRISM	2001/04/30	-76.57%
MMG	MICROMEGA HDG.	2001/05/31	-61.17%	NPN	NASPERS	1997/09/30	-62.50%	PIM	PRISM	2001/05/31	-78.58%
MMG	MICROMEGA HDG.	2001/06/30	-73.24%	NPN	NASPERS	1997/10/31	-53.14%	PIM	PRISM	2001/06/30	-87.04%
MMG	MICROMEGA HDG.	2001/07/31	-77.40%	NPN	NASPERS	2000/02/29	-64.67%	PIM	PRISM	2001/07/31	-90.45%
MMG	MICROMEGA HDG.	2001/08/31	-74.69%	NPN	NASPERS	2000/03/31	-66.42%	PIM	PRISM	2001/08/31	-94.07%
MMG	MICROMEGA HDG.	2001/09/30	-81.02%	NPN	NASPERS	2000/04/30	-62.14%	PIM	PRISM	2001/09/30	-94.55%
MMG	MICROMEGA HDG.	2001/11/30	-51.53%	NPN	NASPERS	2000/05/31	-50.62%	PIM	PRISM	2001/10/31	-77.72%
MMG	MICROMEGA HDG.	2001/12/31	-57.56%	NPN	NASPERS	2000/07/31	-54.12%	PIM	PRISM	2001/11/30	-88.12%
MMG	MICROMEGA HDG.	2002/01/31	-74.44%	NPN	NASPERS	2000/08/31	-57.96%	PIM	PRISM	2001/12/31	-80.59%
MMG	MICROMEGA HDG.	2002/02/28	-81.82%	NPN	NASPERS	2000/09/30	-74.81%	PIM	PRISM	2002/01/31	-77.07%
MMG	MICROMEGA HDG.	2002/03/31	-81.60%	NPN	NASPERS	2000/10/31	-67.49%	PIM	PRISM	2002/02/28	-65.80%
MMG	MICROMEGA HDG.	2002/04/30	-84.87%	NPN	NASPERS	2001/01/31	-57.83%	PIM	PRISM	2002/03/31	-68.39%
MMG	MICROMEGA HDG.	2002/05/31	-64.38%	NPN	NASPERS	2001/02/28	-58.24%	PIM	PRISM	2002/04/30	-79.07%
MMG	MICROMEGA HDG.	2002/10/31	-61.02%	NPN	NASPERS	2001/03/31	-53.71%	PIM	PRISM	2002/05/31	-69.03%
MLA	MITTAL STEEL SA.	1996/12/31	-55.92%	NTC	NETWORK HLTHCR.	1997/09/30	-51.34%	RBW	RAINBOW CHICKEN	1995/01/31	-51.13%
MLA	MITTAL STEEL SA.	1997/02/28	-50.79%	NTC	NETWORK HLTHCR.	1998/02/28	-51.30%	RBW	RAINBOW CHICKEN	1995/08/31	-67.25%
MLA	MITTAL STEEL SA.	1997/03/31	-50.00%	NTC	NETWORK HLTHCR.	1998/05/31	-59.88%	RBW	RAINBOW CHICKEN	1995/09/30	-63.52%
MLA	MITTAL STEEL SA.	1997/06/30	-62.10%	NHM	NORTHAM PLATINUM	1996/05/31	-57.35%	RBW	RAINBOW CHICKEN	1995/10/31	-59.98%
MLA	MITTAL STEEL SA.	1997/07/31	-56.67%	NHM	NORTHAM PLATINUM	1996/06/30	-51.52%	RBW	RAINBOW CHICKEN	1995/11/30	-53.46%
MLA	MITTAL STEEL SA.	1997/08/31	-55.42%	NHM	NORTHAM PLATINUM	1996/07/31	-51.80%	RBW	RAINBOW CHICKEN	1995/12/31	-53.69%
MLA	MITTAL STEEL SA.	1997/09/30	-52.66%	NWL	NU WORLD	1998/04/30	-59.74%	RBW	RAINBOW CHICKEN	1996/05/31	-51.75%
MLA	MITTAL STEEL SA.	1999/11/30	-50.21%	NWL	NU WORLD	1998/05/31	-69.21%	RBW	RAINBOW CHICKEN	1996/12/31	-76.10%
MOB	MOBILE INDUSTRIES	1996/02/29	-50.09%	NWL	NU WORLD	1998/06/30	-66.45%	RBW	RAINBOW CHICKEN	1997/01/31	-84.58%
MOB	MOBILE INDUSTRIES	1996/03/31	-50.23%	NWL	NU WORLD	1998/07/31	-50.55%	RBW	RAINBOW CHICKEN	1997/02/28	-82.19%
MOB	MOBILE INDUSTRIES	1996/04/30	-66.12%	NWL	NU WORLD	1998/08/31	-58.90%	RBW	RAINBOW CHICKEN	1997/03/31	-79.64%
MOB	MOBILE INDUSTRIES	1996/05/31	-67.66%	NWL	NU WORLD	1998/10/31	-52.00%	RBW	RAINBOW CHICKEN	1997/04/30	-58.84%
MOB	MOBILE INDUSTRIES	1996/06/30	-83.27%	OMN	OMNIA	1997/08/31	-51.09%	RBW	RAINBOW CHICKEN	1997/05/31	-84.95%
MOB	MOBILE INDUSTRIES	1996/07/31	-70.79%	OMN	OMNIA	1998/03/31	-50.29%	RBW	RAINBOW CHICKEN	1997/06/30	-56.12%
MOB	MOBILE INDUSTRIES	1996/08/31	-65.72%	OMN	OMNIA	2000/02/29	-54.54%	RBW	RAINBOW CHICKEN	1997/07/31	-53.02%
MOB	MOBILE INDUSTRIES	1996/09/30	-65.10%	OMN	OMNIA	2000/03/31	-59.33%	RBW	RAINBOW CHICKEN	1997/08/31	-82.42%
MOB	MOBILE INDUSTRIES	1996/10/31	-74.58%	OMN	OMNIA	2000/04/30	-50.41%	RBW	RAINBOW CHICKEN	1997/09/30	-64.36%
MOB	MOBILE INDUSTRIES	1996/11/30	-75.49%	PAM	PALABORA MINING	1997/02/28	-50.77%	RBW	RAINBOW CHICKEN	1997/10/31	-55.87%
MOB	MOBILE INDUSTRIES	1996/12/31	-76.61%	PAM	PALABORA MINING	1997/05/31	-54.94%	RBW	RAINBOW CHICKEN	1998/02/28	-53.19%
MOB	MOBILE INDUSTRIES	1997/01/31	-75.68%	PAM	PALABORA MINING	1997/06/30	-59.39%	RBW	RAINBOW CHICKEN	1998/03/31	-52.23%
MOB	MOBILE INDUSTRIES	1998/02/28	-62.24%	PAM	PALABORA MINING	1997/07/31	-67.17%	RBW	RAINBOW CHICKEN	1999/04/30	-60.34%
MOB	MOBILE INDUSTRIES	1998/03/31	-65.75%	PAM	PALABORA MINING	1997/08/31	-68.23%	RNG	RANDGOLD & EXP.	1996/10/31	-71.11%
MOB	MOBILE INDUSTRIES	1998/04/30	-84.77%	PAM	PALABORA MINING	1997/09/30	-72.40%	RNG	RANDGOLD & EXP.	1996/11/30	-81.24%
MOB	MOBILE INDUSTRIES	1998/05/31	-69.85%	PAM	PALABORA MINING	1997/10/31	-66.67%	RNG	RANDGOLD & EXP.	1996/12/31	-80.16%
MOB	MOBILE INDUSTRIES	1998/06/30	-65.87%	PCN	PARACON	2000/03/31	-51.72%	RNG	RANDGOLD & EXP.	1997/01/31	-80.24%
MOB	MOBILE INDUSTRIES	1998/07/31	-59.79%	PCN	PARACON	2000/06/30	-50.00%	RNG	RANDGOLD & EXP.	1997/02/28	-84.11%
MOB	MOBILE INDUSTRIES	1998/08/31	-60.61%	PCN	PARACON	2000/07/31	-52.00%	RNG	RANDGOLD & EXP.	1997/03/31	-80.72%
MOB	MOBILE INDUSTRIES	1998/10/31	-54.03%	PCN	PARACON	2000/08/31	-59.29%	RNG	RANDGOLD & EXP.	1997/04/30	-73.93%
MOB	MOBILE INDUSTRIES	1998/11/30	-86.98%	PCN	PARACON	2000/09/30	-69.03%	RNG	RANDGOLD & EXP.	1997/05/31	-82.14%
MOB	MOBILE INDUSTRIES	1998/12/31	-50.07%	PCN	PARACON	2000/10/31	-60.83%	RNG	RANDGOLD & EXP.	1997/06/30	-77.50%
MOB	MOBILE INDUSTRIES	1999/03/31	-57.53%	PCN	PARACON	2000/11/30	-53.19%	RNG	RANDGOLD & EXP.	1997/07/31	-67.18%
MOB	MOBILE INDUSTRIES	1999/04/30	-67.59%	PCN	PARACON	2000/12/31	-53.08%	RNG	RANDGOLD & EXP.	1997/08/31	-78.79%
MOB	MOBILE INDUSTRIES	1999/05/31	-60.11%	PCN	PARACON	2001/02/28	-52.00%	RNG	RANDGOLD & EXP.	1997/09/30	-77.75%
MOB	MOBILE INDUSTRIES	1999/07/31	-61.73%	PGR	PEREGRINE	1998/10/31	-54.21%	RNG	RANDGOLD & EXP.	1997/10/31	-56.73%
MBN	MOBILE INDUSTRIES 'N'	1998/02/28	-59.43%	PGR	PEREGRINE	1998/12/31	-52.90%	RNG	RANDGOLD & EXP.	1997/12/31	-53.96%
MBN	MOBILE INDUSTRIES 'N'	1998/03/31	-68.37%	PGR	PEREGRINE	1999/02/28	-51.13%	RNG	RANDGOLD & EXP.	1998/01/31	-57.81%
MBN	MOBILE INDUSTRIES 'N'	1998/04/30	-67.45%	PGR	PEREGRINE	1999/03/31	-59.85%	RNG	RANDGOLD & EXP.	2003/07/31	-55.82%
MBN	MOBILE INDUSTRIES 'N'	1998/05/31	-66.20%	PGR	PEREGRINE	1999/04/30	-70.75%	RNG	RANDGOLD & EXP.	2003/08/31	-62.61%
MBN	MOBILE INDUSTRIES 'N'	1998/06/30	-62.25%	PGR	PEREGRINE	1999/05/31	-65.98%	RNG	RANDGOLD & EXP.	2003/09/30	-58.54%
MBN	MOBILE INDUSTRIES 'N'	1998/07/31	-57.39%	PGR	PEREGRINE	1999/06/30	-82.10%	RNG	RANDGOLD & EXP.	2003/10/31	-53.97%
MBN	MOBILE INDUSTRIES 'N'	1998/08/31	-55.77%	PGR	PEREGRINE	1999/11/30	-57.17%	RNG	RANDGOLD & EXP.	2003/11/30	-65.96%
MBN	MOBILE INDUSTRIES 'N'	1998/11/30	-68.95%	PGR	PEREGRINE	1999/12/31	-53.77%	RNG	RANDGOLD & EXP.	2003/12/31	-70.86%
MBN	MOBILE INDUSTRIES 'N'	1999/03/31	-55.74%	PGR	PEREGRINE	2000/01/31	-65.47%	RAH	REAL AFRICA	1998/05/31	-50.85%
MBN	MOBILE INDUSTRIES 'N'	1999/04/30	-63.83%	PGR	PEREGRINE	2000/02/29	-61.00%	RAH	REAL AFRICA	1998/07/31	-60.60%
MBN	MOBILE INDUSTRIES 'N'	1999/05/31	-61.07%	PGR	PEREGRINE	2000/03/31	-64.83%	RAH	REAL AFRICA	1998/09/30	-67.62%
MBN	MOBILE INDUSTRIES 'N'	1999/07/31	-60.67%	PGR	PEREGRINE	2000/04/30	-55.05%	RAH	REAL AFRICA	1998/10/31	-58.42%
MPC	MR PRICE GROUP	1996/02/29	-55.77%	PGR	PEREGRINE	2000/05/31	-53.03%	RAH	REAL AFRICA	1998/11/30	-55.82%
MPC	MR PRICE GROUP	1999/11/30	-54.79%	PGR	PEREGRINE	2000/06/30	-51.24%	RAH	REAL AFRICA	1999/03/31	-53.72%
MPC	MR PRICE GROUP	2000/02/29	-56.87%	PGR	PEREGRINE	2000/07/31	-60.88%	RAH	REAL AFRICA	1999/08/31	-51.89%
MPC	MR PRICE GROUP	2000/03/31	-58.77%	PGR	PEREGRINE	2000/08/31	-53.35%	RAH	REAL AFRICA	2000/01/31	-50.53%
MTN	MTN GROUP	2000/07/31	-55.05%	PPC	PRETORIA POR.CMT.	1997/07/31	-54.92%	RLO	REUNERT	1997/06/30	-54.95%
MTN	MTN GROUP	2000/08/31	-51.25%	PPC	PRETORIA POR.CMT.	1997/08/31	-54.31%	RLO	REUNERT	1997/07/31	-54.26%
MTN	MTN GROUP	2000/09/30	-54.08%	PPC	PRETORIA POR.CMT.	1997/09/30	-51.52%	RLO	REUNERT	1997/08/31	-69.64%
MUR	MURRAY & ROBERTS	1995/12/31	-58.14%	PMA	PRIMEDIA	1998/02/28	-61.14%	RLO	REUNERT	1997/09/30	-61.23%
MUR	MURRAY & ROBERTS	1996/01/31	-56.70%	PMA	PRIMEDIA	1998/03/31	-60.29%	RCH	RICHEMONT SECS. (JSE)	2002/03/31	-59.19%
MUR	MURRAY & ROBERTS	1996/02/29	-56.78%	PMA	PRIMEDIA	1998/04/30	-66.39%	RCH	RICHEMONT SECS. (JSE)	2002/04/30	-54.22%
MUR	MURRAY & ROBERTS	1997/08/31	-59.23%	PMA	PRIMEDIA	1998/05/31	-77.56%	RMH	RMB	1998/02/28	-56.37%
MUR	MURRAY & ROBERTS	1997/12/31	-54.52%	PMA	PRIMEDIA	1998/06/30	-74.01%	SBL	SABLE	1996/08/31	-61.04%
MUR	MURRAY & ROBERTS	1998/01/31	-54.87%	PMA	PRIMEDIA	1998/07/31	-75.63%	SBL	SABLE	1996/11/30	-53.28%
MUR	MURRAY & ROBERTS	1998/02/28	-70.40%	PMA	PRIMEDIA	1998/08/31	-55.18%	SBL	SABLE	1996/12/31	-59.96%
MUR	MURRAY & ROBERTS	1998/03/31	-66.63%	PMA	PRIMEDIA	1998/09/30	-52.91%	SBL	SABLE	1997/01/31	-59.96%
MUR	MURRAY & ROBERTS	1998/04/30	-57.64%	PMA	PRIMEDIA	1998/10/31	-60.04%	SBL	SABLE	1997/02/28	-55.95%
MUR	MURRAY & ROBERTS	1998/05/31	-64.09%	PMA	PRIMEDIA	1998/11/30	-58.92%	SBL	SABLE	1997/09/30	-75.99%
MST	MUSTEK	1999/03/31	-53.30%	PMN	PRIMEDIA 'N'	1998/02/28	-59.88%	SBL	SABLE	1997/10/31	-75.64%
MST	MUSTEK	1999/05/31	-51.71%	PMN	PRIMEDIA 'N'	1998/03/31	-60.07%	SBL	SABLE	1997/11/30	-69.24%
MST	MUSTEK	1999/06/30	-68.73%	PMN	PRIMEDIA 'N'	1998/04/30	-64.43%	SBL	SABLE	1997/12/31	-78.67%
MST	MUSTEK	1999/07/31	-72.58%	PMN	PRIMEDIA 'N'	1998/05/31	-77.89%	SBL	SABLE	1998/01/31	-64.39%
MST	MUSTEK	1999/08/31	-70.40%	PMN	PRIMEDIA 'N'	1998/06/30	-74.60%	SBL	SABLE	1998/02/28	-67.64%
MST	MUSTEK	1999/09/30	-64.51%	PMN	PRIMEDIA 'N'	1998/07/31	-73.30%	SBL	SABLE	1998/03/31	-75.08%
MST	MUSTEK	1999/10/31	-74.59%	PMN	PRIMEDIA 'N'	1998/08/31	-53.57%	SBL	SABLE	1998/04/30	-68.01%
MST	MUSTEK	1999/11/30	-77.70%	PMN	PRIMEDIA 'N'	1998/10/31	-56.43%	SBL	SABLE	1998/05/31	-64.99%
MST	MUSTEK	1999/12/31	-82.45%	PMN	PRIMEDIA 'N'	1998/11/30	-52.01%	SBL	SABLE	1998/06/30	-60.80%
MST	MUSTEK	2000/01/31	-78.90%	PMN	PRIMEDIA 'N'	2000/03/31	-52.47%	SBL	SABLE	1998/07/31	-51.37%
MST	MUSTEK	2000/02/29	-84.02%	PIM	PRISM	2000/03/31	-68.55%	SGG	SAGE GROUP	1999/12/31	-54.97%
MST	MUSTEK	2000/03/31	-70.97%	PIM	PRISM	2000/04/30	-60.00%	SGG	SAGE GROUP	2001/02/28	-50.29%
MST	MUSTEK	2000/04/30	-64.30%	PIM	PRISM	2000/07/31	-56.85%	SGG	SAGE GROUP	2001/07/31	-51.75%
MST	MUSTEK	2000/05/31	-61.95%	PIM	PRISM	2000/08/31	-56.43%	SGG	SAGE GROUP	2001/08/31	-54.94%
MVG	MVELAPHANDA GROUP	2000/03/31	-55.02%	PIM	PRISM	2000/09/30	-65.71%	SGG	SAGE GROUP	2001/09/30	-57.69%
MVG	MVELAPHANDA GROUP	2000/08/31	-54.73%	PIM	PRISM	2000/10/31	-84.99%	SGG	SAGE GROUP	2001/10/31	-70.43%
MVG	MVELAPHANDA GROUP	2000/09/30	-52.65%	PIM	PRISM	2000/11/30	-72.34%	SGG	SAGE GROUP	2001/11/30	-65.04%
MVL	MVELAPHANDA RES.	1997/02/28	-52.77%	PIM	PRISM	2000/12/31	-82.92%	SGG	SAGE GROUP	2001/12/31	-72.54%
MVL	MVELAPHANDA RES.	2003/11/30	-64.54%	PIM	PRISM	2001/01/31	-86.28%	SGG	SAGE GROUP	2002/01/31	-67.12%
NPK	NAMPAK	1997/08/31	-57.33%	PIM	PRISM	2001/02/28	-90.44%	SGG	SAGE GROUP	2002/02/28	-62.93%
NPK	NAMPAK	1997/09/30	-52.82%	PIM	PRISM	2001/03/31	-83.69%	SGG	SAGE GROUP	2002/03/31	-78.40%

Appendix A.7. Sample Extreme Losers Sorted by Company

Continued.

Code	Company Name	Start Date	Total Return
SGG	SAGE GROUP	2002/04/30	-78.40%
SGG	SAGE GROUP	2002/05/31	-74.95%
SGG	SAGE GROUP	2002/06/30	-69.72%
SGG	SAGE GROUP	2002/07/31	-50.36%
SNT	SANTAM	1997/08/31	-54.54%
SNT	SANTAM	1997/09/30	-59.11%
SAP	SAPPI	1997/01/31	-50.18%
SAP	SAPPI	1997/08/31	-53.80%
SFN	SASFIN	1998/05/31	-57.52%
SFN	SASFIN	1998/06/30	-50.38%
SFN	SASFIN	1999/05/31	-58.80%
SFN	SASFIN	1999/06/30	-58.78%
SFN	SASFIN	1999/07/31	-57.13%
SOL	SASOL	1997/08/31	-55.51%
SOL	SASOL	1997/09/30	-57.36%
SOL	SASOL	1997/10/31	-50.22%
SOL	SASOL	1997/11/30	-52.41%
SOL	SASOL	1997/12/31	-54.11%
SCN	SCHARRIG MINING	1995/04/30	-50.71%
SCN	SCHARRIG MINING	1995/07/31	-53.67%
SCN	SCHARRIG MINING	1995/08/31	-59.20%
SCN	SCHARRIG MINING	1995/10/31	-50.38%
SCN	SCHARRIG MINING	1995/11/30	-62.08%
SCN	SCHARRIG MINING	1995/12/31	-70.65%
SCN	SCHARRIG MINING	1996/01/31	-74.52%
SCN	SCHARRIG MINING	1996/02/29	-81.54%
SCN	SCHARRIG MINING	1996/03/31	-61.08%
SCN	SCHARRIG MINING	1997/03/31	-53.91%
SCN	SCHARRIG MINING	1997/05/31	-50.95%
SCN	SCHARRIG MINING	1997/06/30	-65.81%
SCN	SCHARRIG MINING	1997/07/31	-59.35%
SCN	SCHARRIG MINING	1997/08/31	-68.36%
SCN	SCHARRIG MINING	1997/10/31	-57.21%
SCN	SCHARRIG MINING	1997/11/30	-52.91%
SCN	SCHARRIG MINING	1997/12/31	-52.63%
SCN	SCHARRIG MINING	1998/01/31	-69.58%
SCN	SCHARRIG MINING	1998/02/28	-86.87%
SCN	SCHARRIG MINING	1998/04/30	-55.82%
SCN	SCHARRIG MINING	1998/05/31	-62.02%
SCN	SCHARRIG MINING	1998/07/31	-54.00%
SCN	SCHARRIG MINING	1998/09/30	-57.01%
SCN	SCHARRIG MINING	1998/10/31	-50.00%
SCN	SCHARRIG MINING	1998/11/30	-51.49%
SRN	SEARDEL INV.	1998/04/30	-53.52%
SKJ	SEKUNJALO INVS.	1999/05/31	-84.90%
SKJ	SEKUNJALO INVS.	1999/06/30	-73.00%
SKJ	SEKUNJALO INVS.	1999/07/31	-71.05%
SKJ	SEKUNJALO INVS.	1999/09/30	-67.90%
SKJ	SEKUNJALO INVS.	1999/10/31	-73.44%
SKJ	SEKUNJALO INVS.	1999/11/30	-77.32%
SKJ	SEKUNJALO INVS.	1999/12/31	-62.60%
SKJ	SEKUNJALO INVS.	2000/01/31	-71.86%
SKJ	SEKUNJALO INVS.	2000/02/29	-50.15%
SKJ	SEKUNJALO INVS.	2000/03/31	-70.06%
SKJ	SEKUNJALO INVS.	2000/04/30	-89.98%
SKJ	SEKUNJALO INVS.	2000/05/31	-61.54%
STO	SETPOINT TECH.	1998/07/31	-56.92%
STO	SETPOINT TECH.	1998/08/31	-51.42%
STO	SETPOINT TECH.	1998/10/31	-50.55%
STO	SETPOINT TECH.	1998/11/30	-69.23%
STO	SETPOINT TECH.	1998/12/31	-66.66%
STO	SETPOINT TECH.	1999/01/31	-74.42%
STO	SETPOINT TECH.	1999/02/28	-88.18%
STO	SETPOINT TECH.	1999/03/31	-89.13%
STO	SETPOINT TECH.	1999/04/30	-85.53%
STO	SETPOINT TECH.	1999/05/31	-88.41%
STO	SETPOINT TECH.	1999/06/30	-90.13%
STO	SETPOINT TECH.	1999/07/31	-90.14%
STO	SETPOINT TECH.	1999/08/31	-84.41%
STO	SETPOINT TECH.	1999/09/30	-82.47%
STO	SETPOINT TECH.	1999/10/31	-89.39%
STO	SETPOINT TECH.	1999/11/30	-83.29%
STO	SETPOINT TECH.	1999/12/31	-81.43%
STO	SETPOINT TECH.	2000/01/31	-79.96%
STO	SETPOINT TECH.	2000/02/29	-76.91%
STO	SETPOINT TECH.	2000/03/31	-75.99%
STO	SETPOINT TECH.	2000/04/30	-76.50%
STO	SETPOINT TECH.	2000/05/31	-74.93%
STO	SETPOINT TECH.	2000/06/30	-74.21%
STO	SETPOINT TECH.	2000/07/31	-53.54%
STO	SETPOINT TECH.	2000/08/31	-50.00%
SOV	SOVEREIGN FOOD INVS.	1998/01/31	-52.58%
SOV	SOVEREIGN FOOD INVS.	1998/04/30	-69.55%
SOV	SOVEREIGN FOOD INVS.	1998/05/31	-50.10%
SOV	SOVEREIGN FOOD INVS.	1998/06/30	-60.04%
SOV	SOVEREIGN FOOD INVS.	1998/07/31	-69.75%
SOV	SOVEREIGN FOOD INVS.	1998/08/31	-55.62%
SOV	SOVEREIGN FOOD INVS.	1998/09/30	-55.21%
SOV	SOVEREIGN FOOD INVS.	1998/10/31	-54.82%
SOV	SOVEREIGN FOOD INVS.	1998/12/31	-58.33%
SOV	SOVEREIGN FOOD INVS.	1999/02/28	-73.88%
SOV	SOVEREIGN FOOD INVS.	1999/03/31	-68.97%
SOV	SOVEREIGN FOOD INVS.	1999/04/30	-66.22%
SOV	SOVEREIGN FOOD INVS.	1999/05/31	-71.54%
SOV	SOVEREIGN FOOD INVS.	1999/06/30	-71.57%
SOV	SOVEREIGN FOOD INVS.	1999/07/31	-57.92%
SOV	SOVEREIGN FOOD INVS.	1999/08/31	-65.78%
SOV	SOVEREIGN FOOD INVS.	1999/11/30	-53.25%
SPS	SPESCOM	1999/07/31	-50.00%
SPS	SPESCOM	1999/03/31	-58.21%
SPS	SPESCOM	1999/04/30	-71.35%
SPS	SPESCOM	1999/05/31	-68.13%
SPS	SPESCOM	1999/06/30	-77.14%
SPS	SPESCOM	1999/07/31	-65.89%
SPS	SPESCOM	1999/08/31	-60.45%
SPS	SPESCOM	1999/09/30	-62.81%
SPS	SPESCOM	1999/10/31	-66.25%
SPS	SPESCOM	1999/11/30	-66.66%
SPS	SPESCOM	1999/12/31	-73.54%
SPS	SPESCOM	2000/01/31	-76.19%
SPS	SPESCOM	2000/02/29	-71.95%
SPS	SPESCOM	2000/03/31	-72.14%
SPS	SPESCOM	2000/04/30	-59.19%
SPS	SPESCOM	2001/02/28	-66.66%
SPS	SPESCOM	2001/03/31	-70.78%
SPS	SPESCOM	2001/04/30	-57.50%
SPS	SPESCOM	2001/05/31	-60.43%
SPS	SPESCOM	2001/06/30	-72.46%
SPS	SPESCOM	2001/07/31	-75.00%
SPS	SPESCOM	2001/08/31	-78.37%
SPS	SPESCOM	2001/09/30	-79.33%
SPS	SPESCOM	2001/10/31	-62.98%
SPS	SPESCOM	2001/11/30	-66.53%
SPS	SPESCOM	2001/12/31	-63.43%
SPS	SPESCOM	2002/01/31	-59.85%
SPS	SPESCOM	2002/04/30	-50.59%
SPG	SUPER GROUP	1998/07/31	-51.28%
BSB	THE HOUSE OF BUSBY	1998/05/31	-55.64%
BSB	THE HOUSE OF BUSBY	1998/06/30	-54.98%
BSB	THE HOUSE OF BUSBY	2000/01/31	-58.11%
BSB	THE HOUSE OF BUSBY	2000/02/29	-69.34%
BSB	THE HOUSE OF BUSBY	2000/03/31	-85.25%
BSB	THE HOUSE OF BUSBY	2000/04/30	-53.13%
BSB	THE HOUSE OF BUSBY	2000/06/30	-52.36%
BSB	THE HOUSE OF BUSBY	2000/08/31	-52.99%
BSB	THE HOUSE OF BUSBY	2000/12/31	-51.33%
TIW	TIGER WHEELS	1999/04/30	-53.11%
TIW	TIGER WHEELS	1999/05/31	-57.22%
TIW	TIGER WHEELS	1999/06/30	-55.29%
TIW	TIGER WHEELS	1999/09/30	-53.46%
TIW	TIGER WHEELS	1999/10/31	-62.37%
TIW	TIGER WHEELS	1999/11/30	-52.11%
TIW	TIGER WHEELS	1999/12/31	-57.88%
TIW	TIGER WHEELS	2000/03/31	-53.34%
TNT	TONGAAT HLT.GP.	1997/09/30	-54.00%
TRT	TOURISM INV.	1999/03/31	-64.11%
TRT	TOURISM INV.	1999/04/30	-65.37%
TRT	TOURISM INV.	1999/05/31	-69.22%
TRT	TOURISM INV.	1999/06/30	-80.15%
TRT	TOURISM INV.	1999/07/31	-74.27%
TRT	TOURISM INV.	1999/08/31	-67.01%
TRT	TOURISM INV.	1999/09/30	-72.55%
TRT	TOURISM INV.	1999/10/31	-77.45%
TRT	TOURISM INV.	1999/11/30	-74.95%
TRT	TOURISM INV.	1999/12/31	-67.12%
TRT	TOURISM INV.	2000/01/31	-60.94%
TRT	TOURISM INV.	2000/02/29	-54.69%
TDH	TRADEHOLD	2000/11/30	-58.65%
TDH	TRADEHOLD	2001/01/31	-55.42%
TSX	TRANS HEX GROUP	1997/03/31	-56.26%
TSX	TRANS HEX GROUP	1997/05/31	-51.99%
TSX	TRANS HEX GROUP	1997/06/30	-59.11%
TSX	TRANS HEX GROUP	1997/07/31	-60.24%
TSX	TRANS HEX GROUP	1997/08/31	-60.30%
TSX	TRANS HEX GROUP	1997/09/30	-57.45%
TPC	TRANSPACO	1997/11/30	-55.35%
TPC	TRANSPACO	1998/01/31	-51.51%
TPC	TRANSPACO	1998/02/28	-55.35%
TPC	TRANSPACO	1998/05/31	-50.18%
TPC	TRANSPACO	1998/06/30	-51.14%
TPC	TRANSPACO	1998/07/31	-50.00%
TPC	TRANSPACO	2000/08/31	-56.25%
TPC	TRANSPACO	2000/09/30	-60.00%
TPC	TRANSPACO	2000/10/31	-67.65%
TPC	TRANSPACO	2000/11/30	-53.65%
TPC	TRANSPACO	2000/12/31	-64.03%
TRE	TRENCOR	1998/02/28	-63.32%
TRE	TRENCOR	1998/03/31	-62.38%
TRE	TRENCOR	1998/04/30	-62.54%
TRE	TRENCOR	1998/05/31	-62.66%
TRE	TRENCOR	1998/06/30	-54.46%
TRE	TRENCOR	1998/11/30	-62.46%
TRE	TRENCOR	1998/12/31	-55.81%
TRE	TRENCOR	1999/02/28	-52.64%
TRE	TRENCOR	1999/03/31	-66.77%
TRE	TRENCOR	1999/04/30	-69.22%
TRE	TRENCOR	1999/05/31	-67.88%
TRE	TRENCOR	1999/06/30	-61.71%
TRE	TRENCOR	1999/07/31	-70.94%
TRE	TRENCOR	1999/09/30	-54.32%
UCS	UCS GROUP	1999/05/31	-51.74%
UCS	UCS GROUP	1999/10/31	-68.95%
UCS	UCS GROUP	1999/11/30	-67.83%
UCS	UCS GROUP	1999/12/31	-75.57%
UCS	UCS GROUP	2000/01/31	-72.05%
UCS	UCS GROUP	2000/02/29	-70.91%
UCS	UCS GROUP	2000/03/31	-68.96%
UCS	UCS GROUP	2000/04/30	-68.33%
UCS	UCS GROUP	2000/08/31	-52.61%
VLE	VALUE GROUP	1999/09/30	-51.32%
VLE	VALUE GROUP	2000/02/29	-55.78%
VLE	VALUE GROUP	2000/03/31	-58.87%
VLE	VALUE GROUP	2000/04/30	-56.95%
VLE	VALUE GROUP	2000/09/30	-58.30%
VLE	VALUE GROUP	2001/03/31	-51.30%
WES	WESCO INVESTMENTS	1997/09/30	-62.05%
WES	WESCO INVESTMENTS	1997/10/31	-64.82%
WES	WESCO INVESTMENTS	1997/11/30	-60.90%
WES	WESCO INVESTMENTS	1997/12/31	-62.08%
WES	WESCO INVESTMENTS	1998/02/28	-50.12%
WAR	WESTERN AREAS	1996/05/31	-52.93%
WAR	WESTERN AREAS	1996/06/30	-54.14%
WAR	WESTERN AREAS	1996/07/31	-51.44%
WAR	WESTERN AREAS	1996/10/31	-61.00%
WAR	WESTERN AREAS	1996/11/30	-62.71%
WAR	WESTERN AREAS	1996/12/31	-58.45%
WAR	WESTERN AREAS	1997/02/28	-52.56%
WAR	WESTERN AREAS	1997/08/31	-65.74%
WBO	WILSON BAY HLM OVC	1997/09/30	-60.46%
WBO	WILSON BAY HLM OVC	1997/10/31	-51.17%
WBO	WILSON BAY HLM OVC	1997/11/30	-67.12%
WBO	WILSON BAY HLM OVC	1997/12/31	-56.35%
WBO	WILSON BAY HLM OVC	1998/01/31	-62.57%
WBO	WILSON BAY HLM OVC	1998/02/28	-64.93%
WBO	WILSON BAY HLM OVC	1998/05/31	-52.21%
WNH	WINHOLD	1997/06/30	-58.02%
WNH	WINHOLD	1997/07/31	-67.97%
WNH	WINHOLD	1997/08/31	-85.13%
WNH	WINHOLD	1997/09/30	-82.82%
WNH	WINHOLD	1997/10/31	-68.76%
WNH	WINHOLD	1997/11/30	-69.67%
WNH	WINHOLD	1997/12/31	-70.64%
WNH	WINHOLD	1998/01/31	-66.63%
WNH	WINHOLD	1998/02/28	-64.40%
WNH	WINHOLD	1998/03/31	-77.46%
WNH	WINHOLD	1998/04/30	-65.83%
WNH	WINHOLD	1998/05/31	-63.12%
WNH	WINHOLD	1998/06/30	-61.54%
WNH	WINHOLD	1998/07/31	-51.92%
WNH	WINHOLD	1998/11/30	-50.19%

Appendix A.8. Sample Extreme Losers Sorted by Date

The table lists 12 month periods of extreme performance for all extreme losers on the JSE Securities Exchange from January 1995 until December 2004 included in this study. An extreme loser is defined as a stock which at least halves in a 12 month period. In addition to the names of all extreme performers, the table lists the share codes for each, the start date of the 12 month period of extreme performance, as well as the return over each of these periods. The lists are sorted by date.

Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return
1995/01/31	AFL	AFLEASE GD.& UR.RES.	-50.00%	1996/07/31	WAR	WESTERN AREAS	-51.44%	1997/02/28	MLA	MITTAL STEEL SA.	-50.79%
1995/01/31	CSB	CASHBUILD	-60.41%	1996/08/31	APN	ASPEN PHMCR.	-61.82%	1997/02/28	MVL	MVELAPHANDA RES.	-52.77%
1995/01/31	GDH	GOOD HOPE DIAMONDS	-74.78%	1996/08/31	CNL	CONTROL INSTRUMENTS GP.	-62.03%	1997/02/28	PAM	PALABORA MINING	-50.77%
1995/01/31	INM	INMINS	-61.99%	1996/08/31	CUL	CULLINAN	-69.54%	1997/02/28	RBW	RAINBOW CHICKEN	-82.19%
1995/01/31	RBW	RAINBOW CHICKEN	-51.13%	1996/08/31	DRD	DRD GOLD	-64.97%	1997/02/28	RNG	RANDGOLD & EXP.	-84.11%
1995/02/28	GDH	GOOD HOPE DIAMONDS	-70.60%	1996/08/31	DAW	DS.& WHSG.NETWORK	-68.84%	1997/02/28	SBL	SABLE	-55.95%
1995/02/28	INM	INMINS	-55.52%	1996/08/31	MTX	METOREX	-66.65%	1997/02/28	WAR	WESTERN AREAS	-52.56%
1995/03/31	CPA	CORPCAPITAL	-76.81%	1996/08/31	MOB	MOBILE INDUSTRIES	-65.72%	1997/03/31	ARI	AFN.RAINBOW MRLS.	-66.46%
1995/03/31	INM	INMINS	-57.10%	1996/08/31	SBL	SABLE	-61.04%	1997/03/31	ART	ARGENT INDUSTRIAL	-59.33%
1995/04/30	SCN	SCHARRIG MINING	-50.71%	1996/09/30	APN	ASPEN PHMCR.	-59.18%	1997/03/31	AVI	AVI	-54.60%
1995/05/31	ART	ARGENT INDUSTRIAL	-54.26%	1996/09/30	CNL	CONTROL INSTRUMENTS GP.	-63.47%	1997/03/31	BEL	BELL EQUIPMENT	-77.29%
1995/05/31	CSB	CASHBUILD	-60.00%	1996/09/30	CPA	CORPCAPITAL	-61.45%	1997/03/31	DRD	DRD GOLD	-67.45%
1995/05/31	GDH	GOOD HOPE DIAMONDS	-50.02%	1996/09/30	CUL	CULLINAN	-68.01%	1997/03/31	ENV	ENVIROSERV	-78.16%
1995/06/30	CSB	CASHBUILD	-63.25%	1996/09/30	DRD	DRD GOLD	-72.32%	1997/03/31	GND	GRINDROD	-55.21%
1995/06/30	GDH	GOOD HOPE DIAMONDS	-65.00%	1996/09/30	DAW	DS.& WHSG.NETWORK	-81.84%	1997/03/31	GRF	GROUP FIVE	-65.99%
1995/07/31	CSB	CASHBUILD	-68.38%	1996/09/30	MTX	METOREX	-76.12%	1997/03/31	HAR	HARMONY GOLD MNG.	-52.09%
1995/07/31	GDH	GOOD HOPE DIAMONDS	-58.84%	1996/09/30	MOB	MOBILE INDUSTRIES	-65.10%	1997/03/31	JCD	JCI	-69.36%
1995/07/31	SCN	SCHARRIG MINING	-53.87%	1996/10/31	APN	ASPEN PHMCR.	-50.00%	1997/03/31	KAP	KAP INTL.	-73.28%
1995/08/31	ART	ARGENT INDUSTRIAL	-51.58%	1996/10/31	CNL	CONTROL INSTRUMENTS GP.	-65.25%	1997/03/31	MLA	MITTAL STEEL SA.	-50.00%
1995/08/31	GDH	GOOD HOPE DIAMONDS	-66.64%	1996/10/31	CUL	CULLINAN	-84.78%	1997/03/31	RBW	RAINBOW CHICKEN	-79.64%
1995/08/31	RBW	RAINBOW CHICKEN	-67.25%	1996/10/31	DRD	DRD GOLD	-78.76%	1997/03/31	RNG	RANDGOLD & EXP.	-80.72%
1995/08/31	SCN	SCHARRIG MINING	-59.20%	1996/10/31	DAW	DS.& WHSG.NETWORK	-79.81%	1997/03/31	SCN	SCHARRIG MINING	-53.91%
1995/09/30	GDH	GOOD HOPE DIAMONDS	-59.99%	1996/10/31	HAR	HARMONY GOLD MNG.	-53.86%	1997/03/31	TSX	TRANS HEX GROUP	-56.26%
1995/09/30	RBW	RAINBOW CHICKEN	-63.52%	1996/10/31	JCD	JCI	-50.49%	1997/04/30	BRM	BEARING MAN	-56.84%
1995/10/31	CUL	CULLINAN	-50.94%	1996/10/31	KAP	KAP INTL.	-52.76%	1997/04/30	BEL	BELL EQUIPMENT	-58.04%
1995/10/31	KAP	KAP INTL.	-52.39%	1996/10/31	MTX	METOREX	-73.36%	1997/04/30	CUL	CULLINAN	-58.51%
1995/10/31	RBW	RAINBOW CHICKEN	-59.98%	1996/10/31	MOB	MOBILE INDUSTRIES	-74.58%	1997/04/30	ENV	ENVIROSERV	-74.02%
1995/10/31	SCN	SCHARRIG MINING	-50.38%	1996/10/31	RNG	RANDGOLD & EXP.	-71.11%	1997/04/30	GRF	GROUP FIVE	-54.26%
1995/11/30	ART	ARGENT INDUSTRIAL	-53.41%	1996/10/31	WAR	WESTERN AREAS	-61.00%	1997/04/30	JCD	JCI	-59.85%
1995/11/30	CUL	CULLINAN	-61.07%	1996/11/30	ARI	AFN.RAINBOW MRLS.	-55.10%	1997/04/30	KAP	KAP INTL.	-73.03%
1995/11/30	DAW	DS.& WHSG.NETWORK	-51.24%	1996/11/30	AVI	AVI	-60.54%	1997/04/30	RBW	RAINBOW CHICKEN	-58.84%
1995/11/30	RBW	RAINBOW CHICKEN	-53.46%	1996/11/30	CNL	CONTROL INSTRUMENTS GP.	-62.93%	1997/04/30	RNG	RANDGOLD & EXP.	-73.93%
1995/11/30	SCN	SCHARRIG MINING	-62.08%	1996/11/30	CUL	CULLINAN	-78.77%	1997/05/31	ARI	AFN.RAINBOW MRLS.	-57.70%
1995/12/31	ALT	ALLIED TECHNOLOGIES	-50.83%	1996/11/30	DRD	DRD GOLD	-81.02%	1997/05/31	ART	ARGENT INDUSTRIAL	-60.15%
1995/12/31	ART	ARGENT INDUSTRIAL	-58.12%	1996/11/30	DAW	DS.& WHSG.NETWORK	-77.26%	1997/05/31	BRM	BEARING MAN	-56.02%
1995/12/31	APN	ASPEN PHMCR.	-52.96%	1996/11/30	GND	GRINDROD	-53.62%	1997/05/31	BEL	BELL EQUIPMENT	-73.12%
1995/12/31	CMH	COMBINED MOTOR	-53.11%	1996/11/30	HAR	HARMONY GOLD MNG.	-66.92%	1997/05/31	ENV	ENVIROSERV	-76.40%
1995/12/31	CUL	CULLINAN	-59.99%	1996/11/30	JCD	JCI	-69.97%	1997/05/31	JCD	JCI	-72.47%
1995/12/31	DAW	DS.& WHSG.NETWORK	-60.00%	1996/11/30	KAP	KAP INTL.	-63.60%	1997/05/31	KAP	KAP INTL.	-80.59%
1995/12/31	MUR	MURRAY & ROBERTS	-58.14%	1996/11/30	MTX	METOREX	-67.61%	1997/05/31	PAM	PALABORA MINING	-54.94%
1995/12/31	RBW	RAINBOW CHICKEN	-53.69%	1996/11/30	MOB	MOBILE INDUSTRIES	-75.49%	1997/05/31	RBW	RAINBOW CHICKEN	-64.95%
1995/12/31	SCN	SCHARRIG MINING	-70.65%	1996/11/30	RNG	RANDGOLD & EXP.	-81.24%	1997/05/31	RNG	RANDGOLD & EXP.	-82.14%
1996/01/31	ATN	ALLIED ELECTRONICS	-51.67%	1996/11/30	SBL	SABLE	-53.28%	1997/05/31	SCN	SCHARRIG MINING	-50.95%
1996/01/31	ALT	ALLIED TECHNOLOGIES	-50.17%	1996/11/30	WAR	WESTERN AREAS	-62.71%	1997/05/31	TSX	TRANS HEX GROUP	-51.99%
1996/01/31	BPL	BARPLATS INVS.	-51.92%	1996/12/31	ARI	AFN.RAINBOW MRLS.	-54.95%	1997/06/30	AFL	AFLEASE GD & UR.RES.	-60.00%
1996/01/31	CMH	COMBINED MOTOR	-57.57%	1996/12/31	AVI	AVI	-56.63%	1997/06/30	ARI	AFN.RAINBOW MRLS.	-67.93%
1996/01/31	CUL	CULLINAN	-70.52%	1996/12/31	CNL	CONTROL INSTRUMENTS GP.	-73.28%	1997/06/30	ART	ARGENT INDUSTRIAL	-67.03%
1996/01/31	DAW	DS.& WHSG.NETWORK	-53.92%	1996/12/31	CUL	CULLINAN	-79.27%	1997/06/30	AVI	AVI	-60.11%
1996/01/31	FOS	FOSCHINI	-50.30%	1996/12/31	DRD	DRD GOLD	-80.00%	1997/06/30	BRM	BEARING MAN	-65.71%
1996/01/31	MUR	MURRAY & ROBERTS	-56.70%	1996/12/31	DAW	DS.& WHSG.NETWORK	-70.00%	1997/06/30	BEL	BELL EQUIPMENT	-81.14%
1996/01/31	SCN	SCHARRIG MINING	-74.52%	1996/12/31	GND	GRINDROD	-51.84%	1997/06/30	DST	DISTELL GROUP	-53.33%
1996/02/29	CMH	COMBINED MOTOR	-50.96%	1996/12/31	HAR	HARMONY GOLD MNG.	-69.27%	1997/06/30	ECO	EDGARS CONS.STORES	-54.32%
1996/02/29	CUL	CULLINAN	-76.25%	1996/12/31	JCD	JCI	-67.57%	1997/06/30	ENV	ENVIROSERV	-77.02%
1996/02/29	DAW	DS.& WHSG.NETWORK	-65.52%	1996/12/31	KAP	KAP INTL.	-74.21%	1997/06/30	GRF	GROUP FIVE	-55.40%
1996/02/29	MOB	MOBILE INDUSTRIES	-50.09%	1996/12/31	MTX	METOREX	-72.99%	1997/06/30	HWN	HOWDEN AFRICA	-50.77%
1996/02/29	MPC	MR PRICE GROUP	-55.77%	1996/12/31	MLA	MITTAL STEEL SA.	-55.92%	1997/06/30	HDC	HUDACO	-53.45%
1996/02/29	MUR	MURRAY & ROBERTS	-56.78%	1996/12/31	MOB	MOBILE INDUSTRIES	-76.61%	1997/06/30	JCD	JCI	-74.51%
1996/02/29	SCN	SCHARRIG MINING	-61.54%	1996/12/31	RBW	RAINBOW CHICKEN	-76.10%	1997/06/30	KAP	KAP INTL.	-81.78%
1996/03/31	APN	ASPEN PHMCR.	-69.06%	1996/12/31	RNG	RANDGOLD & EXP.	-80.16%	1997/06/30	KWV	KWV BELEGGINGS BPK.	-55.33%
1996/03/31	CMH	COMBINED MOTOR	-54.17%	1996/12/31	SBL	SABLE	-59.96%	1997/06/30	MLA	MITTAL STEEL SA.	-82.10%
1996/03/31	CUL	CULLINAN	-86.36%	1996/12/31	WAR	WESTERN AREAS	-58.45%	1997/06/30	PAM	PALABORA MINING	-59.39%
1996/03/31	DAW	DS.& WHSG.NETWORK	-68.00%	1997/01/31	ARI	AFN.RAINBOW MRLS.	-55.97%	1997/06/30	RBW	RAINBOW CHICKEN	-56.12%
1996/03/31	MOB	MOBILE INDUSTRIES	-50.23%	1997/01/31	ART	ARGENT INDUSTRIAL	-59.64%	1997/06/30	RNG	RANDGOLD & EXP.	-77.50%
1996/03/31	SCN	SCHARRIG MINING	-61.08%	1997/01/31	APN	ASPEN PHMCR.	-51.47%	1997/06/30	RLO	REUNERT	-54.95%
1996/04/30	CUL	CULLINAN	-82.91%	1997/01/31	AVI	AVI	-53.95%	1997/06/30	SCN	SCHARRIG MINING	-65.81%
1996/04/30	DAW	DS.& WHSG.NETWORK	-69.56%	1997/01/31	BEL	BELL EQUIPMENT	-56.99%	1997/06/30	TSX	TRANS HEX GROUP	-59.11%
1996/04/30	GND	GRINDROD	-61.95%	1997/01/31	CNL	CONTROL INSTRUMENTS GP.	-86.14%	1997/06/30	WNH	WINHOLD	-58.02%
1996/04/30	MOB	MOBILE INDUSTRIES	-66.12%	1997/01/31	CUL	CULLINAN	-73.24%	1997/07/31	ARI	AFN.RAINBOW MRLS.	-68.31%
1996/05/31	APN	ASPEN PHMCR.	-60.32%	1997/01/31	DLV	DORBYL	-53.58%	1997/07/31	ART	ARGENT INDUSTRIAL	-63.27%
1996/05/31	CNL	CONTROL INSTRUMENTS GP.	-51.10%	1997/01/31	DRD	DRD GOLD	-56.06%	1997/07/31	AVI	AVI	-64.10%
1996/05/31	CUL	CULLINAN	-82.00%	1997/01/31	DAW	DS.& WHSG.NETWORK	-79.23%	1997/07/31	BEL	BELL EQUIPMENT	-76.88%
1996/05/31	DRD	DRD GOLD	-56.57%	1997/01/31	ENV	ENVIROSERV	-60.13%	1997/07/31	CNC	CONCOR	-67.16%
1996/05/31	DAW	DS.& WHSG.NETWORK	-68.00%	1997/01/31	GND	GRINDROD	-54.36%	1997/07/31	DST	DISTELL GROUP	-59.36%
1996/05/31	GND	GRINDROD	-59.55%	1997/01/31	HAR	HARMONY GOLD MNG.	-57.83%	1997/07/31	DLV	DORBYL	-56.24%
1996/05/31	MOB	MOBILE INDUSTRIES	-67.66%	1997/01/31	JCD	JCI	-62.64%	1997/07/31	ECO	EDGARS CONS.STORES	-75.67%
1996/05/31	NHM	NORTHAM PLATINUM	-57.35%	1997/01/31	KAP	KAP INTL.	-84.68%	1997/07/31	ENV	ENVIROSERV	-77.55%
1996/05/31	RBW	RAINBOW CHICKEN	-51.75%	1997/01/31	MTX	METOREX	-52.20%	1997/07/31	GRF	GROUP FIVE	-85.68%
1996/05/31	WAR	WESTERN AREAS	-52.93%	1997/01/31	MOB	MOBILE INDUSTRIES	-75.68%	1997/07/31	HWN	HOWDEN AFRICA	-85.66%
1996/06/30	APN	ASPEN PHMCR.	-57.87%	1997/01/31	RBW	RAINBOW CHICKEN	-84.58%	1997/07/31	HDC	HUDACO	-84.14%
1996/06/30	CNL	CONTROL INSTRUMENTS GP.	-61.06%	1997/01/31	RNG	RANDGOLD & EXP.	-80.24%	1997/07/31	INM	INMINS	-59.95%
1996/06/30	CUL	CULLINAN	-76.81%	1997/01/31	SBL	SABLE	-59.96%	1997/07/31	IVT	INVICTA	-54.11%
1996/06/30	DRD	DRD GOLD	-55.77%	1997/01/31	SAP	SAPPI	-50.18%	1997/07/31	JCD	JCI	-79.00%
1996/06/30	DAW	DS.& WHSG.NETWORK	-72.23%	1997/02/28	ARI	AFN.RAINBOW MRLS.	-67.24%	1997/07/31	KAP	KAP INTL.	-79.47%
1996/06/30	GND	GRINDROD	-63.86%	1997/02/28	ART	ARGENT INDUSTRIAL	-66.97%	1997/07/31	MLA	MITTAL STEEL SA.	-56.67%
1996/06/30	MTX	METOREX	-66.17%	1997/02/28	BPL	BARPLATS INVS.	-52.94%	1997/07/31	PAM	PALABORA MINING	-67.17%
1996/06/30	MOB	MOBILE INDUSTRIES	-63.27%	1997/02/28	BEL	BELL EQUIPMENT	-63.62%	1997/07/31	PPC	PRETORIA POR.CMT.	-54.92%
1996/06/30	NHM	NORTHAM PLATINUM	-51.52%	1997/02/28	CLH	CITY LODGE HOTELS	-51.39%	1997/07/31	RBW	RAINBOW CHICKEN	-53.02%
1996/06/30	WAR	WESTERN AREAS	-54.14%	1997/02/28	CNL	CONTROL INSTRUMENTS GP.	-77.11%	1997/07/31	RNG	RANDGOLD & EXP.	-67.18%
1996/07/31	APN	ASPEN PHMCR.	-67.99%	1997/02/28	CUL	CULLINAN	-88.45%	1997/07/31	RLO	REUNERT	-54.26%
1996/07/31	CNL	CONTROL INSTRUMENTS GP.	-58.12%	1997/02/28	DRD	DRD GOLD	-70.13%	1997/07/31	SCN	SCHARRIG MINING	-59.35%
1996/07/31	CUL	CULLINAN	-73.11%	1997/02/28	DAW	DS.& WHSG.NETWORK	-85.02%	1997/07/31	TSX	TRANS HEX GROUP	-60.24%
1996/07/31	DRD	DRD GOLD	-74.88%	1997/02/28	ENV	ENVIROSERV	-76.28%	1997/07/31	WNH	WINHOLD	-67.97%
1996/07/31	DAW	DS.& WHSG.NETWORK	-79.72%	1997/02/28	GND	GRINDROD	-54.80%	1997/08/31	ARI	AFN.RAINBOW MRLS.	-76.14%
1996/07/31	HAR	HARMONY GOLD MNG.	-51.11%	1997/02/28	GRF	GROUP FIVE	-63.53%	1997/08/31	AFX	AFRICAN OXYGEN	-58.83%
1996/07/31	KAP	KAP INTL.	-51.74%	1997/02/28	HAR	HARMONY GOLD MNG.	-57.22%	1997/08/31	ART	ARGENT INDUSTRIAL	-71.86%
1996/07/31	MTX	METOREX	-64.12%	1997/02/28	JCD	JCI	-62.95%	1997/08/31	AVI	AVI	-67.50%
1996/07/31	MOB	MOBILE INDUSTRIES	-70.79%	1997/02/28	KAP	KAP INTL.	-67.65%	1997/08/31	BAW	BARLOWORLD	-56.65%
1996/07/31	NHM	NORTHAM PLATINUM	-51.80%	1997/02/28	MTX	METOREX	-63.37%	1997/08/31	BRM	BEARING MAN	-64.09%

Appendix A.8. Sample Extreme Losers Sorted by Date

Continued.

Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return
1997/08/31	BEL	BELL EQUIPMENT	-77.65%	1997/10/31	KWV	KWV BELEGGINGS BPK.	-61.67%	1998/02/28	MOB	MOBILE INDUSTRIES	-62.24%
1997/08/31	CNC	CONCOR	-65.02%	1997/10/31	NPN	NASPERS	-53.14%	1998/02/28	MBN	MOBILE INDUSTRIES 'N'	-59.43%
1997/08/31	CUL	CULLINAN	-55.26%	1997/10/31	PAM	PALABORA MINING	-66.67%	1998/02/28	MUR	MURRAY & ROBERTS	-70.40%
1997/08/31	DST	DISTELL GROUP	-61.07%	1997/10/31	RBW	RAINBOW CHICKEN	-55.87%	1998/02/28	NTC	NETWORK HLTHCR.	-51.30%
1997/08/31	DLV	DORBYL	-75.14%	1997/10/31	RNG	RANDGOLD & EXP.	-56.73%	1998/02/28	PMA	PRIMEDIA	-61.14%
1997/08/31	ECO	EDGARS CONS.STORES	-82.10%	1997/10/31	SBL	SABLE	-75.64%	1998/02/28	PMN	PRIMEDIA 'N'	-59.88%
1997/08/31	ELH	ELLERINE	-65.43%	1997/10/31	SOL	SASOL	-50.22%	1998/02/28	RMH	RMB	-56.37%
1997/08/31	ENV	ENVIROSERV	-80.23%	1997/10/31	SCN	SCHARRIG MINING	-57.21%	1998/02/28	SBL	SABLE	-87.64%
1997/08/31	FBR	FAMOUS BRANDS	-60.28%	1997/10/31	WES	WESCO INVESTMENTS	-64.82%	1998/02/28	SCN	SCHARRIG MINING	-66.87%
1997/08/31	FOS	FOSCHINI	-55.83%	1997/10/31	WBO	WILSON BAY HLM OVC	-51.17%	1998/02/28	TPC	TRANSPACO	-55.35%
1997/08/31	GRF	GROUP FIVE	-75.74%	1997/10/31	WNH	WINHOLD	-68.76%	1998/02/28	TRE	TRENCOR	-63.32%
1997/08/31	HWN	HOWDEN AFRICA	-72.96%	1997/11/30	AFE	AECI	-52.13%	1998/02/28	WES	WESCO INVESTMENTS	-50.12%
1997/08/31	HDC	HUDACO	-75.46%	1997/11/30	ARI	AFN.RAINBOW MRLS.	-62.24%	1998/02/28	WBO	WILSON BAY HLM OVC	-64.93%
1997/08/31	INM	INMINS	-67.60%	1997/11/30	AMA	AMAL.APPC.	-57.05%	1998/02/28	WNH	WINHOLD	-64.40%
1997/08/31	IVT	INVICTA	-72.10%	1997/11/30	BRM	BEARING MAN	-51.70%	1998/03/31	ADH	ADVTECH	-58.58%
1997/08/31	JCD	JCI	-80.89%	1997/11/30	BEL	BELL EQUIPMENT	-60.21%	1998/03/31	AMA	AMAL.APPC.	-75.47%
1997/08/31	KAP	KAP INTL.	-86.02%	1997/11/30	CNC	CONCOR	-60.43%	1998/03/31	BRM	BEARING MAN	-56.07%
1997/08/31	KWV	KWV BELEGGINGS BPK.	-58.71%	1997/11/30	CKS	CROOKES BROTHERS	-51.88%	1998/03/31	BRC	BRANDCORP	-58.03%
1997/08/31	MDC	MEDI CLINIC	-56.70%	1997/11/30	DST	DISTELL GROUP	-63.27%	1998/03/31	CSB	CASHBUILD	-58.25%
1997/08/31	MLA	MITTAL STEEL SA.	-55.42%	1997/11/30	DLV	DORBYL	-62.69%	1998/03/31	CNC	CONCOR	-63.90%
1997/08/31	MUR	MURRAY & ROBERTS	-59.23%	1997/11/30	ECO	EDGARS CONS.STORES	-76.21%	1998/03/31	CCT	CONNECTION GP.	-66.07%
1997/08/31	NPK	NAMPAK	-57.33%	1997/11/30	ELH	ELLERINE	-58.58%	1998/03/31	ECO	EDGARS CONS.STORES	-61.52%
1997/08/31	NPN	NASPERS	-51.68%	1997/11/30	ENV	ENVIROSERV	-69.37%	1998/03/31	GDH	GOOD HOPE DIAMONDS	-55.50%
1997/08/31	OMN	OMNIA	-51.09%	1997/11/30	GRF	GROUP FIVE	-64.97%	1998/03/31	HWN	HOWDEN AFRICA	-63.93%
1997/08/31	PAM	PALABORA MINING	-68.23%	1997/11/30	HWN	HOWDEN AFRICA	-81.12%	1998/03/31	HDC	HUDACO	-56.45%
1997/08/31	PPC	PRETORIA POR.CMT.	-54.31%	1997/11/30	HDC	HUDACO	-64.30%	1998/03/31	INM	INMINS	-50.15%
1997/08/31	RBW	RAINBOW CHICKEN	-62.42%	1997/11/30	INM	INMINS	-62.64%	1998/03/31	IVT	INVICTA	-66.76%
1997/08/31	RNG	RANDGOLD & EXP.	-78.79%	1997/11/30	IVT	INVICTA	-74.10%	1998/03/31	KAP	KAP INTL.	-50.00%
1997/08/31	RLO	REUNERT	-69.64%	1997/11/30	KAP	KAP INTL.	-80.34%	1998/03/31	LGL	LIBERTY GROUP	-52.27%
1997/08/31	SNT	SANTAM	-54.54%	1997/11/30	KWV	KWV BELEGGINGS BPK.	-62.04%	1998/03/31	MOB	MOBILE INDUSTRIES	-65.75%
1997/08/31	SAP	SAPPI	-53.80%	1997/11/30	SBL	SABLE	-69.24%	1998/03/31	MBN	MOBILE INDUSTRIES 'N'	-68.37%
1997/08/31	SOL	SASOL	-55.51%	1997/11/30	SOL	SASOL	-52.41%	1998/03/31	MUR	MURRAY & ROBERTS	-66.63%
1997/08/31	SCN	SCHARRIG MINING	-68.39%	1997/11/30	SCN	SCHARRIG MINING	-52.91%	1998/03/31	OMN	OMNIA	-50.29%
1997/08/31	TSX	TRANS HEX GROUP	-60.30%	1997/11/30	TPC	TRANSPACO	-55.35%	1998/03/31	PMA	PRIMEDIA	-60.29%
1997/08/31	WAR	WESTERN AREAS	-65.74%	1997/11/30	WES	WESCO INVESTMENTS	-60.90%	1998/03/31	PMN	PRIMEDIA 'N'	-60.07%
1997/08/31	WNH	WINHOLD	-85.13%	1997/11/30	WBO	WILSON BAY HLM OVC	-67.12%	1998/03/31	SBL	SABLE	-75.08%
1997/09/30	AFE	AECI	-55.82%	1997/11/30	WNH	WINHOLD	-69.67%	1998/03/31	TRE	TRENCOR	-62.38%
1997/09/30	ARI	AFN.RAINBOW MRLS.	-58.89%	1997/12/31	ARI	AFN.RAINBOW MRLS.	-67.80%	1998/03/31	WNH	WINHOLD	-77.46%
1997/09/30	AMA	AMAL.APPC.	-50.83%	1997/12/31	ART	ARGENT INDUSTRIAL	-50.00%	1998/04/30	ADH	ADVTECH	-54.69%
1997/09/30	ART	ARGENT INDUSTRIAL	-71.64%	1997/12/31	BRM	BEARING MAN	-61.06%	1998/04/30	AMA	AMAL.APPC.	-81.02%
1997/09/30	AVI	AVI	-67.00%	1997/12/31	CNC	CONCOR	-65.66%	1998/04/30	ART	ARGENT INDUSTRIAL	-55.24%
1997/09/30	BAW	BARLOWORLD	-57.31%	1997/12/31	DST	DISTELL GROUP	-60.01%	1998/04/30	BRC	BRANDCORP	-78.94%
1997/09/30	BEL	BELL EQUIPMENT	-73.99%	1997/12/31	DLV	DORBYL	-55.72%	1998/04/30	BTG	BYTES TECH.GP.	-63.76%
1997/09/30	BRC	BRANDCORP	-56.53%	1997/12/31	ECO	EDGARS CONS.STORES	-77.95%	1998/04/30	CCT	CONNECTION GP.	-83.11%
1997/09/30	CLH	CITY LODGE HOTELS	-69.94%	1997/12/31	ELH	ELLERINE	-58.19%	1998/04/30	ECO	EDGARS CONS.STORES	-63.89%
1997/09/30	CNC	CONCOR	-55.21%	1997/12/31	ENV	ENVIROSERV	-66.63%	1998/04/30	ELH	ELLERINE	-52.25%
1997/09/30	CKS	CROOKES BROTHERS	-56.19%	1997/12/31	FOS	FOSCHINI	-51.87%	1998/04/30	IVT	INVICTA	-61.09%
1997/09/30	DST	DISTELL GROUP	-58.87%	1997/12/31	GRF	GROUP FIVE	-59.16%	1998/04/30	KAP	KAP INTL.	-51.67%
1997/09/30	DLV	DORBYL	-72.90%	1997/12/31	HWN	HOWDEN AFRICA	-75.46%	1998/04/30	MOB	MOBILE INDUSTRIES	-64.77%
1997/09/30	ECO	EDGARS CONS.STORES	-84.15%	1997/12/31	HDC	HUDACO	-63.16%	1998/04/30	MBN	MOBILE INDUSTRIES 'N'	-67.45%
1997/09/30	ELH	ELLERINE	-63.93%	1997/12/31	IVT	INVICTA	-72.65%	1998/04/30	MUR	MURRAY & ROBERTS	-57.64%
1997/09/30	ENV	ENVIROSERV	-86.65%	1997/12/31	KAP	KAP INTL.	-62.30%	1998/04/30	NWL	NU WORLD	-59.74%
1997/09/30	FOS	FOSCHINI	-51.34%	1997/12/31	MUR	MURRAY & ROBERTS	-54.52%	1998/04/30	PMA	PRIMEDIA	-66.39%
1997/09/30	GRF	GROUP FIVE	-72.28%	1997/12/31	RNG	RANDGOLD & EXP.	-53.96%	1998/04/30	PMN	PRIMEDIA 'N'	-64.43%
1997/09/30	HWN	HOWDEN AFRICA	-87.95%	1997/12/31	SBL	SABLE	-78.67%	1998/04/30	SBL	SABLE	-88.01%
1997/09/30	HDC	HUDACO	-76.25%	1997/12/31	SOL	SASOL	-54.11%	1998/04/30	SCN	SCHARRIG MINING	-55.82%
1997/09/30	INM	INMINS	-68.50%	1997/12/31	SCN	SCHARRIG MINING	-52.63%	1998/04/30	SRN	SEARDEL INV.	-53.52%
1997/09/30	IVT	INVICTA	-73.69%	1997/12/31	WES	WESCO INVESTMENTS	-62.08%	1998/04/30	SOV	SOVEREIGN FOOD INVS.	-69.55%
1997/09/30	JCD	JCI	-88.64%	1997/12/31	WBO	WILSON BAY H.M OVC	-68.35%	1998/04/30	TRE	TRENCOR	-62.54%
1997/09/30	JNC	JOHNNIC	-57.72%	1997/12/31	WNH	WINHOLD	-70.64%	1998/04/30	WNH	WINHOLD	-85.83%
1997/09/30	KAP	KAP INTL.	-85.26%	1998/01/31	ARI	AFN.RAINBOW MRLS.	-53.42%	1998/05/31	ADH	ADVTECH	-62.75%
1997/09/30	KWV	KWV BELEGGINGS BPK.	-65.61%	1998/01/31	AMA	AMAL.APPC.	-57.65%	1998/05/31	AFE	AECI	-51.44%
1997/09/30	MDC	MEDI CLINIC	-58.58%	1998/01/31	APK	ASTRAPAK	-54.64%	1998/05/31	AMA	AMAL.APPC.	-82.70%
1997/09/30	MLA	MITTAL STEEL SA.	-52.66%	1998/01/31	BRM	BEARING MAN	-56.11%	1998/05/31	BRC	BRANDCORP	-78.69%
1997/09/30	NPK	NAMPAK	-52.82%	1998/01/31	CLH	CITY LODGE HOTELS	-60.05%	1998/05/31	BTG	BYTES TECH.GP.	-65.01%
1997/09/30	NPN	NASPERS	-62.50%	1998/01/31	CNC	CONCOR	-68.96%	1998/05/31	CCT	CONNECTION GP.	-86.72%
1997/09/30	NTC	NETWORK HLTHCR.	-51.34%	1998/01/31	DST	DISTELL GROUP	-58.49%	1998/05/31	CUL	CULLINAN	-65.50%
1997/09/30	PAM	PALABORA MINING	-72.40%	1998/01/31	ECO	EDGARS CONS.STORES	-71.19%	1998/05/31	EXL	EXCELLERATE HDG.	-69.58%
1997/09/30	PPC	PRETORIA POR.CMT.	-51.52%	1998/01/31	ELH	ELLERINE	-58.22%	1998/05/31	GDH	GOOD HOPE DIAMONDS	-66.70%
1997/09/30	RBW	RAINBOW CHICKEN	-64.36%	1998/01/31	ENV	ENVIROSERV	-62.93%	1998/05/31	IVT	INVICTA	-56.90%
1997/09/30	RNG	RANDGOLD & EXP.	-77.75%	1998/01/31	GRF	GROUP FIVE	-66.41%	1998/05/31	KGM	KAGISO MEDIA	-59.28%
1997/09/30	RLO	REUNERT	-61.23%	1998/01/31	HWN	HOWDEN AFRICA	-74.80%	1998/05/31	MDC	MEDI CLINIC	-55.44%
1997/09/30	SBL	SABLE	-75.99%	1998/01/31	HDC	HUDACO	-59.96%	1998/05/31	MRF	MERAFE RESOURCES	-65.58%
1997/09/30	SNT	SANTAM	-59.11%	1998/01/31	IVT	INVICTA	-69.17%	1998/05/31	MOB	MOBILE INDUSTRIES	-69.85%
1997/09/30	SOL	SASOL	-57.36%	1998/01/31	JCD	JCI	-55.35%	1998/05/31	MBN	MOBILE INDUSTRIES 'N'	-66.20%
1997/09/30	TNT	TONGAAT HLT.GP.	-54.00%	1998/01/31	MUR	MURRAY & ROBERTS	-54.87%	1998/05/31	MUR	MURRAY & ROBERTS	-64.09%
1997/09/30	TSX	TRANS HEX GROUP	-57.45%	1998/01/31	RNG	RANDGOLD & EXP.	-57.81%	1998/05/31	NTC	NETWORK HLTHCR.	-59.88%
1997/09/30	WES	WESCO INVESTMENTS	-62.05%	1998/01/31	SBL	SABLE	-64.39%	1998/05/31	NWL	NU WORLD	-69.21%
1997/09/30	WBO	WILSON BAY HLM OVC	-60.46%	1998/01/31	SCN	SCHARRIG MINING	-69.58%	1998/05/31	PMA	PRIMEDIA	-77.56%
1997/09/30	WNH	WINHOLD	-82.82%	1998/01/31	SOV	SOVEREIGN FOOD INVS.	-52.58%	1998/05/31	PMN	PRIMEDIA 'N'	-77.89%
1997/10/31	ARI	AFN.RAINBOW MRLS.	-68.27%	1998/01/31	TPC	TRANSPACO	-51.51%	1998/05/31	RAH	REAL AFRICA	-50.85%
1997/10/31	ART	ARGENT INDUSTRIAL	-67.02%	1998/01/31	WBO	WILSON BAY HLM OVC	-62.57%	1998/05/31	SBL	SABLE	-64.99%
1997/10/31	AVI	AVI	-53.59%	1998/01/31	WNH	WINHOLD	-66.63%	1998/05/31	SFN	SASFIN	-57.52%
1997/10/31	BEL	BELL EQUIPMENT	-70.60%	1998/02/28	AMA	AMAL.APPC.	-68.03%	1998/05/31	SCN	SCHARRIG MINING	-62.02%
1997/10/31	CLH	CITY LODGE HOTELS	-52.89%	1998/02/28	APK	ASTRAPAK	-53.80%	1998/05/31	SOV	SOVEREIGN FOOD INVS.	-50.10%
1997/10/31	CKS	CROOKES BROTHERS	-58.18%	1998/02/28	BRC	BRANDCORP	-55.56%	1998/05/31	BSB	THE HOUSE OF BUSBY	-55.64%
1997/10/31	DST	DISTELL GROUP	-61.70%	1998/02/28	CSB	CASHBUILD	-51.23%	1998/05/31	TPC	TRANSPACO	-50.18%
1997/10/31	DLV	DORBYL	-67.26%	1998/02/28	CNC	CONCOR	-69.80%	1998/05/31	TRE	TRENCOR	-62.66%
1997/10/31	ECO	EDGARS CONS.STORES	-76.16%	1998/02/28	CCT	CONNECTION GP.	-56.75%	1998/05/31	WBO	WILSON BAY HLM OVC	-52.21%
1997/10/31	ELH	ELLERINE	-57.29%	1998/02/28	DST	DISTELL GROUP	-58.69%	1998/05/31	WNH	WINHOLD	-63.12%
1997/10/31	ENV	ENVIROSERV	-78.64%	1998/02/28	ECO	EDGARS CONS.STORES	-65.55%	1998/06/30	ADH	ADVTECH	-57.13%
1997/10/31	GRF	GROUP FIVE	-62.04%	1998/02/28	ELH	ELLERINE	-54.79%	1998/06/30	AMA	AMAL.APPC.	-75.95%
1997/10/31	HWN	HOWDEN AFRICA	-81.82%	1998/02/28	HWN	HOWDEN AFRICA	-68.18%	1998/06/30	BRC	BRANDCORP	-82.61%
1997/10/31	HDC	HUDACO	-70.57%	1998/02/28	HDC	HUDACO	-62.83%	1998/06/30	BTG	BYTES TECH.GP.	-73.20%
1997/10/31	INM	INMINS	-52.74%	1998/02/28	IVT	INVICTA	-69.68%	1998/06/30	CCT	CONNECTION GP.	-93.00%
1997/10/31	IVT	INVICTA	-67.67%	1998/02/28	JCD	JCI	-53.69%	1998/06/30	CUL	CULLINAN	-60.45%
1997/10/31	JCD	JCI	-62.67%	1998/02/28	KAP	KAP INTL.	-60.00%	1998/06/30	EXL	EXCELLERATE HDG	-70.01%
1997/10/31	KAP	KAP INTL.	-78.79%	1998/02/28	KWV	KWV BELEGGINGS BPK.	-54.07%	1998/06/30	GDH	GOOD HOPE DIAMONDS	-65.73%

Appendix A.8. Sample Extreme Losers Sorted by Date

Continued.

Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return
1998/06/30	ILA	ILIAD AFRICA	-50.99%	1998/11/30	RAH	REAL AFRICA	-55.82%	1999/05/31	MOB	MOBILE INDUSTRIES	-60.11%
1998/06/30	KGM	KAGISO MEDIA	-64.82%	1998/11/30	SCN	SCHARRIG MINING	-51.49%	1999/05/31	MBN	MOBILE INDUSTRIES 'N'	-61.07%
1998/06/30	MOB	MOBILE INDUSTRIES	-65.87%	1998/11/30	STO	SETPOINT TECH.	-69.23%	1999/05/31	MST	MUSTEK	-51.71%
1998/06/30	MBN	MOBILE INDUSTRIES 'N'	-62.25%	1998/11/30	TRE	TRENCOR	-62.46%	1999/05/31	PGR	PEREGRINE	-65.98%
1998/06/30	NWL	NU WORLD	-66.45%	1998/11/30	WNH	WINHOLD	-50.19%	1999/05/31	SFN	SASFIN	-56.80%
1998/06/30	PMA	PRIMEDIA	-74.01%	1998/12/31	ADH	ADVTECH	-61.91%	1999/05/31	SKJ	SEKUNJALO INVS.	-64.90%
1998/06/30	PMN	PRIMEDIA 'N'	-74.60%	1998/12/31	BRN	BRIMSTONE INV.'N	-55.89%	1999/05/31	STO	SETPOINT TECH.	-88.41%
1998/06/30	SBL	SABLE	-60.80%	1998/12/31	BTG	BYTES TECH.GP.	-77.37%	1999/05/31	SOV	SOVEREIGN FOOD INVS.	-71.54%
1998/06/30	SFN	SASFIN	-50.38%	1998/12/31	CCT	CONNECTION GP.	-84.54%	1999/05/31	SPS	SPESCOM	-68.13%
1998/06/30	SOV	SOVEREIGN FOOD INVS.	-60.04%	1998/12/31	CUL	CULLINAN	-68.21%	1999/05/31	TIW	TIGER WHEELS	-57.22%
1998/06/30	BSB	THE HOUSE OF BUSBY	-54.98%	1998/12/31	GDH	GOOD HOPE DIAMONDS	-82.47%	1999/05/31	TRT	TOURISM INV.	-69.22%
1998/06/30	TPC	TRANSPACO	-51.14%	1998/12/31	JSC	JASCO ELTN.	-70.13%	1999/05/31	TRE	TRENCOR	-67.88%
1998/06/30	TRE	TRENCOR	-54.46%	1998/12/31	MOB	MOBILE INDUSTRIES	-50.07%	1999/05/31	UCS	UCS GROUP	-51.74%
1998/06/30	WNH	WINHOLD	-61.54%	1998/12/31	PGR	PEREGRINE	-52.90%	1999/06/30	ADH	ADVTECH	-72.24%
1998/07/31	ADH	ADVTECH	-57.84%	1998/12/31	STO	SETPOINT TECH.	-66.66%	1999/06/30	ABL	AFRICAN BANK INVS.	-59.26%
1998/07/31	AMA	AMAL.APPC.	-68.39%	1998/12/31	SOV	SOVEREIGN FOOD INVS.	-58.33%	1999/06/30	AFI	AFRICAN LIFE ASR.	-53.05%
1998/07/31	BCF	BOWLER METCALF	-52.53%	1998/12/31	TRE	TRENCOR	-55.81%	1999/06/30	BJM	BARNARD JAC.MELLET	-55.84%
1998/07/31	BRC	BRANDCORP	-74.00%	1999/01/31	ADH	ADVTECH	-71.68%	1999/06/30	BTG	BYTES TECH.GP.	-84.17%
1998/07/31	BRN	BRIMSTONE INV.'N'	-84.25%	1999/01/31	BRN	BRIMSTONE INV.'N'	-67.23%	1999/06/30	CDZ	CADIZ	-52.80%
1998/07/31	BTG	BYTES TECH.GP.	-74.22%	1999/01/31	BTG	BYTES TECH.GP.	-73.83%	1999/06/30	CNC	CONCOR	-68.83%
1998/07/31	CRG	CARGO CARRIERS	-54.53%	1999/01/31	CCT	CONNECTION GP.	-81.66%	1999/06/30	CUL	CULLINAN	-73.57%
1998/07/31	CCT	CONNECTION GP.	-95.49%	1999/01/31	CUL	CULLINAN	-81.36%	1999/06/30	DCT	DATACENTRIX	-52.38%
1998/07/31	CNL	CONTROL INSTRUMENTS GP.	-53.81%	1999/01/31	DGC	DIGICORE	-53.57%	1999/06/30	DGC	DIGICORE	-59.97%
1998/07/31	CUL	CULLINAN	-68.11%	1999/01/31	GDH	GOOD HOPE DIAMONDS	-83.73%	1999/06/30	EOH	ENTER.OUTSC.	-51.52%
1998/07/31	EXL	EXCELLERATE HDG.	-66.67%	1999/01/31	JSC	JASCO ELTN.	-73.70%	1999/06/30	GDH	GOOD HOPE DIAMONDS	-75.10%
1998/07/31	GDH	GOOD HOPE DIAMONDS	-68.88%	1999/01/31	STO	SETPOINT TECH.	-74.42%	1999/06/30	JSC	JASCO ELTN.	-89.85%
1998/07/31	ILA	ILIAD AFRICA	-52.00%	1999/02/28	ADH	ADVTECH	-75.49%	1999/06/30	LAR	LA GROUP	-79.14%
1998/07/31	JSC	JASCO ELTN.	-87.93%	1999/02/28	BRN	BRIMSTONE INV.'N'	-70.32%	1999/06/30	LAN	LA GROUP 'N'	-75.70%
1998/07/31	KGM	KAGISO MEDIA	-53.33%	1999/02/28	BTG	BYTES TECH.GP.	-75.89%	1999/06/30	MTL	MERCANTILE BANK	-69.24%
1998/07/31	MOB	MOBILE INDUSTRIES	-59.79%	1999/02/28	CCT	CONNECTION GP.	-79.62%	1999/06/30	MST	MUSTEK	-68.73%
1998/07/31	MBN	MOBILE INDUSTRIES 'N	-57.39%	1999/02/28	CUL	CULLINAN	-82.08%	1999/06/30	PGR	PEREGRINE	-62.10%
1998/07/31	NWL	NU WORLD	-50.55%	1999/02/28	DGC	DIGICORE	-62.47%	1999/06/30	SFN	SASFIN	-58.78%
1998/07/31	PMA	PRIMEDIA	-75.63%	1999/02/28	GDH	GOOD HOPE DIAMONDS	-88.06%	1999/06/30	SKJ	SEKUNJALO INVS	-73.00%
1998/07/31	PMN	PRIMEDIA 'N'	-73.30%	1999/02/28	JSC	JASCO ELTN.	-81.84%	1999/06/30	STO	SETPOINT TECH.	-90.13%
1998/07/31	RAH	REAL AFRICA	-60.60%	1999/02/28	KAP	KAP INTL.	-54.55%	1999/06/30	SOV	SOVEREIGN FOOD INVS	-71.57%
1998/07/31	SBL	SABLE	-51.37%	1999/02/28	MTL	MERCANTILE BANK	-55.56%	1999/06/30	SPS	SPESCOM	-77.14%
1998/07/31	SCN	SCHARRIG MINING	-54.00%	1999/02/28	PGR	PEREGRINE	-51.13%	1999/06/30	TIW	TIGER WHEELS	-55.29%
1998/07/31	STO	SETPOINT TECH.	-56.92%	1999/02/28	RBW	RAINBOW CHICKEN	-53.19%	1999/06/30	TRT	TOURISM INV.	-80.15%
1998/07/31	SOV	SOVEREIGN FOOD INVS.	-69.75%	1999/02/28	STO	SETPOINT TECH.	-88.18%	1999/06/30	TRE	TRENCOR	-61.71%
1998/07/31	SPS	SPESCOM	-50.00%	1999/02/28	SOV	SOVEREIGN FOOD INVS.	-73.88%	1999/07/31	ADH	ADVTECH	-77.11%
1998/07/31	SPG	SUPER GROUP	-51.28%	1999/02/28	TRE	TRENCOR	-52.64%	1999/07/31	ABL	AFRICAN BANK INVS.	-57.55%
1998/07/31	TPC	TRANSPACO	-50.00%	1999/03/31	ADH	ADVTECH	-79.33%	1999/07/31	AFI	AFRICAN LIFE ASR.	-60.98%
1998/07/31	WNH	WINHOLD	-51.92%	1999/03/31	BRN	BRIMSTONE INV.'N'	-89.34%	1999/07/31	BJM	BARNARD JAC.MELLET	-59.34%
1998/08/31	BRC	BRANDCORP	-55.56%	1999/03/31	BTG	BYTES TECH.GP.	-84.30%	1999/07/31	BTG	BYTES TECH.GP.	-85.85%
1998/08/31	BRN	BRIMSTONE INV.'N'	-81.18%	1999/03/31	CCT	CONNECTION GP.	-58.86%	1999/07/31	CNC	CONCOR	-62.91%
1998/08/31	BTG	BYTES TECH.GP.	-50.07%	1999/03/31	CUL	CULLINAN	-73.11%	1999/07/31	CPA	CORPCAPITAL	-51.77%
1998/08/31	CCT	CONNECTION GP.	-91.14%	1999/03/31	DGC	DIGICORE	-52.84%	1999/07/31	CUL	CULLINAN	-66.52%
1998/08/31	CUL	CULLINAN	-66.74%	1999/03/31	GDF	GOLD REEF CNO.RSTS.	-53.64%	1999/07/31	DGC	DIGICORE	-55.35%
1998/08/31	EXL	EXCELLERATE HDG.	-60.00%	1999/03/31	GDH	GOOD HOPE DIAMONDS	-85.09%	1999/07/31	GDH	GOOD HOPE DIAMONDS	-71.33%
1998/08/31	GDH	GOOD HOPE DIAMONDS	-68.88%	1999/03/31	JSC	JASCO ELTN.	-81.02%	1999/07/31	JSC	JASCO ELTN.	-79.38%
1998/08/31	MOB	MOBILE INDUSTRIES	-60.61%	1999/03/31	KAP	KAP INTL.	-50.00%	1999/07/31	LAR	LA GROUP	-78.77%
1998/08/31	MBN	MOBILE INDUSTRIES 'N'	-55.77%	1999/03/31	MTL	MERCANTILE BANK	-58.58%	1999/07/31	LAN	LA GROUP 'N'	-75.51%
1998/08/31	NWL	NU WORLD	-58.90%	1999/03/31	MOB	MOBILE INDUSTRIES	-57.53%	1999/07/31	MTL	MERCANTILE BANK	-70.22%
1998/08/31	PMA	PRIMEDIA	-55.18%	1999/03/31	MBN	MOBILE INDUSTRIES 'N'	-55.74%	1999/07/31	MOB	MOBILE INDUSTRIES	-61.73%
1998/08/31	PMN	PRIMEDIA 'N'	-53.57%	1999/03/31	MST	MUSTEK	-53.30%	1999/07/31	MBN	MOBILE INDUSTRIES 'N'	-60.67%
1998/08/31	STO	SETPOINT TECH.	-51.42%	1999/03/31	PGR	PEREGRINE	-59.85%	1999/07/31	MST	MUSTEK	-72.58%
1998/08/31	SOV	SOVEREIGN FOOD INVS.	-55.62%	1999/03/31	RBW	RAINBOW CHICKEN	-52.23%	1999/07/31	SFN	SASFIN	-57.13%
1998/09/30	BCF	BOWLER METCALF	-54.26%	1999/03/31	RAH	REAL AFRICA	-53.72%	1999/07/31	SKJ	SEKUNJALO INVS.	-71.05%
1998/09/30	BRN	BRIMSTONE INV.'N'	-72.79%	1999/03/31	STO	SETPOINT TECH.	-89.13%	1999/07/31	STO	SETPOINT TECH.	-90.14%
1998/09/30	BTG	BYTES TECH.GP.	-53.95%	1999/03/31	SOV	SOVEREIGN FOOD INVS.	-68.97%	1999/07/31	SOV	SOVEREIGN FOOD INVS.	-57.92%
1998/09/30	CCT	CONNECTION GP.	-89.47%	1999/03/31	SPS	SPESCOM	-58.21%	1999/07/31	SPS	SPESCOM	-65.89%
1998/09/30	CUL	CULLINAN	-72.09%	1999/03/31	TRT	TOURISM INV.	-64.11%	1999/07/31	TRT	TOURISM INV.	-74.27%
1998/09/30	GDH	GOOD HOPE DIAMONDS	-82.50%	1999/03/31	TRE	TRENCOR	-66.77%	1999/07/31	TRE	TRENCOR	-70.94%
1998/09/30	JSC	JASCO ELTN.	-62.83%	1999/04/30	ADH	ADVTECH	-83.38%	1999/08/31	ADH	ADVTECH	-69.63%
1998/09/30	PMA	PRIMEDIA	-52.91%	1999/04/30	BRN	BRIMSTONE INV.'N'	-72.45%	1999/08/31	AFI	AFRICAN LIFE ASR.	-51.78%
1998/09/30	RAH	REAL AFRICA	-67.82%	1999/04/30	BTG	BYTES TECH.GP.	-86.29%	1999/08/31	BJM	BARNARD JAC.MELLET	-57.76%
1998/09/30	SCN	SCHARRIG MINING	-57.01%	1999/04/30	CDZ	CADIZ	-51.88%	1999/08/31	BTG	BYTES TECH.GP.	-87.32%
1998/09/30	SOV	SOVEREIGN FOOD INVS.	-55.21%	1999/04/30	CUL	CULLINAN	-77.89%	1999/08/31	CNC	CONCOR	-61.64%
1998/10/31	ADH	ADVTECH	-64.61%	1999/04/30	DCT	DATACENTRIX	-50.00%	1999/08/31	CPA	CORPCAPITAL	-52.22%
1998/10/31	ABL	AFRICAN BANK INVS.	-53.86%	1999/04/30	DTC	DATATEC	-50.00%	1999/08/31	DGC	DIGICORE	-53.99%
1998/10/31	BRC	BRANDCORP	-57.05%	1999/04/30	DGC	DIGICORE	-61.08%	1999/08/31	GDH	GOOD HOPE DIAMONDS	-78.67%
1998/10/31	BRN	BRIMSTONE INV.'N'	-61.64%	1999/04/30	GDH	GOOD HOPE DIAMONDS	-91.63%	1999/08/31	JSC	JASCO ELTN.	-73.53%
1998/10/31	BTG	BYTES TECH.GP.	-78.38%	1999/04/30	JSC	JASCO ELTN.	-83.36%	1999/08/31	JCD	JCI	-63.26%
1998/10/31	CCT	CONNECTION GP.	-93.00%	1999/04/30	JCD	JCI	-55.47%	1999/08/31	LAR	LA GROUP	-66.40%
1998/10/31	CUL	CULLINAN	-72.43%	1999/04/30	KAP	KAP INTL.	-55.17%	1999/08/31	LAN	LA GROUP 'N'	-63.53%
1998/10/31	GDH	GOOD HOPE DIAMONDS	-77.48%	1999/04/30	MTL	MERCANTILE BANK	-63.16%	1999/08/31	MTL	MERCANTILE BANK	-70.32%
1998/10/31	JSC	JASCO ELTN.	-66.93%	1999/04/30	MOB	MOBILE INDUSTRIES	-67.59%	1999/08/31	MST	MUSTEK	-70.40%
1998/10/31	MOB	MOBILE INDUSTRIES	-54.03%	1999/04/30	MBN	MOBILE INDUSTRIES 'N'	-63.83%	1999/08/31	RAH	REAL AFRICA	-51.89%
1998/10/31	NWL	NU WORLD	-52.00%	1999/04/30	PGR	PEREGRINE	-70.75%	1999/08/31	STO	SETPOINT TECH.	-84.41%
1998/10/31	PGR	PEREGRINE	-54.21%	1999/04/30	RBW	RAINBOW CHICKEN	-60.34%	1999/08/31	SOV	SOVEREIGN FOOD INVS.	-65.78%
1998/10/31	PMA	PRIMEDIA	-60.04%	1999/04/30	STO	SETPOINT TECH.	-85.53%	1999/08/31	SPS	SPESCOM	-60.45%
1998/10/31	PMN	PRIMEDIA 'N'	-56.43%	1999/04/30	SOV	SOVEREIGN FOOD INVS.	-66.22%	1999/08/31	TRT	TOURISM INV.	-67.01%
1998/10/31	RAH	REAL AFRICA	-58.42%	1999/04/30	SPS	SPESCOM	-71.35%	1999/09/30	ADH	ADVTECH	-80.00%
1998/10/31	SCN	SCHARRIG MINING	-50.00%	1999/04/30	TIW	TIGER WHEELS	-53.11%	1999/09/30	BJM	BARNARD JAC.MELLET	-52.55%
1998/10/31	STO	SETPOINT TECH.	-50.55%	1999/04/30	TRT	TOURISM INV.	-65.37%	1999/09/30	BTG	BYTES TECH.GP.	-86.53%
1998/10/31	SOV	SOVEREIGN FOOD INVS.	-54.82%	1999/04/30	TRE	TRENCOR	-69.22%	1999/09/30	CDZ	CADIZ	-50.40%
1998/11/30	ADH	ADVTECH	-55.89%	1999/05/31	ADH	ADVTECH	-78.93%	1999/09/30	DCT	DATACENTRIX	-50.00%
1998/11/30	BRC	BRANDCORP	-60.32%	1999/05/31	BTG	BYTES TECH.GP.	-88.03%	1999/09/30	ERP	ERP.COM	-61.00%
1998/11/30	BRN	BRIMSTONE INV.'N'	-58.82%	1999/05/31	CDZ	CADIZ	-55.71%	1999/09/30	JSC	JASCO ELTN.	-55.63%
1998/11/30	BTG	BYTES TECH.GP.	-76.11%	1999/05/31	CNC	CONCOR	-64.02%	1999/09/30	JCD	JCI	-67.94%
1998/11/30	CCT	CONNECTION GP.	-86.96%	1999/05/31	CUL	CULLINAN	-74.92%	1999/09/30	LAR	LA GROUP	-76.42%
1998/11/30	CUL	CULLINAN	-61.94%	1999/05/31	DCT	DATACENTRIX	-54.59%	1999/09/30	LAN	LA GROUP 'N'	-75.22%
1998/11/30	GDH	GOOD HOPE DIAMONDS	-83.90%	1999/05/31	DGC	DIGICORE	-65.67%	1999/09/30	MTL	MERCANTILE BANK	-69.27%
1998/11/30	JSC	JASCO ELTN.	-77.37%	1999/05/31	GDH	GOOD HOPE DIAMONDS	-73.20%	1999/09/30	MST	MUSTEK	-64.51%
1998/11/30	MOB	MOBILE INDUSTRIES	-66.98%	1999/05/31	JSC	JASCO ELTN.	-86.89%	1999/09/30	SKJ	SEKUNJALO INVS.	-67.90%
1998/11/30	MBN	MOBILE INDUSTRIES 'N'	-68.95%	1999/05/31	LAR	LA GROUP	-77.62%	1999/09/30	STO	SETPOINT TECH.	-82.47%
1998/11/30	PMA	PRIMEDIA	-58.92%	1999/05/31	LAN	LA GROUP 'N'	-72.61%	1999/09/30	SPS	SPESCOM	-62.81%
1998/11/30	PMN	PRIMEDIA 'N'	-52.01%	1999/05/31	MTL	MERCANTILE BANK	-70.22%	1999/09/30	TIW	TIGER WHEELS	-53.46%

Appendix A.8. Sample Extreme Losers Sorted by Date

Continued.

Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return	Start Date	Code	Company Name	Total Return
1999/09/30	TRT	TOURISM INV.	-72.55%	2000/01/31	CSB	CASHBUILD	-58.61%	2000/04/30	ECO	EDGARS CONS.STORES	-64.60%
1999/09/30	TRE	TRENCOR	-54.32%	2000/01/31	CNC	CONCOR	-68.32%	2000/04/30	ERP	ERP.COM	-80.00%
1999/09/30	VLE	VALUE GROUP	-51.32%	2000/01/31	DCT	DATACENTRIX	-65.64%	2000/04/30	FOS	FOSCHINI	-53.53%
1999/10/31	ADH	ADVTECH	-79.96%	2000/01/31	DTC	DATATEC	-60.25%	2000/04/30	FRO	FRONTRANGE SLTN.	-90.98%
1999/10/31	AFL	AFLEASE GD.& UR.RES.	-55.56%	2000/01/31	ECO	EDGARS CONS.STORES	-63.86%	2000/04/30	IDI	IDION TECH.	-73.49%
1999/10/31	AFI	AFRICAN LIFE ASR.	-88.37%	2000/01/31	EOH	ENTER.OUTSC.	-54.71%	2000/04/30	JSC	JASCO ELTN.	-84.75%
1999/10/31	BJM	BARNARD JAC.MELLET	-65.33%	2000/01/31	ERP	ERP.COM	-82.86%	2000/04/30	LAR	LA GROUP	-72.41%
1999/10/31	BTG	BYTES TECH.GP.	-68.50%	2000/01/31	FOS	FOSCHINI	-61.53%	2000/04/30	LAN	LA GROUP 'N'	-73.36%
1999/10/31	CDZ	CADIZ	-66.19%	2000/01/31	FRO	FRONTRANGE SLTN.	-90.96%	2000/04/30	MST	MUSTEK	-64.30%
1999/10/31	CNC	CONCOR	-56.16%	2000/01/31	GDH	GOOD HOPE DIAMONDS	-50.41%	2000/04/30	NPN	NASPERS	-62.14%
1999/10/31	DCT	DATACENTRIX	-53.56%	2000/01/31	IDI	IDION TECH.	-82.58%	2000/04/30	OMN	OMNIA	-50.41%
1999/10/31	ECO	EDGARS CONS.STORES	-52.69%	2000/01/31	JSC	JASCO ELTN.	-74.85%	2000/04/30	PGR	PEREGRINE	-55.05%
1999/10/31	ERP	ERP.COM	-61.90%	2000/01/31	LAR	LA GROUP	-83.04%	2000/04/30	PIM	PRISM	-60.00%
1999/10/31	FRO	FRONTRANGE SLTN.	-55.17%	2000/01/31	LAN	LA GROUP 'N'	-84.04%	2000/04/30	SKJ	SEKUNJALO INVS.	-69.98%
1999/10/31	GDH	GOOD HOPE DIAMONDS	-55.43%	2000/01/31	MTL	MERCANTILE BANK	-62.24%	2000/04/30	STO	SETPOINT TECH.	-76.50%
1999/10/31	JSC	JASCO ELTN.	-81.82%	2000/01/31	MST	MUSTEK	-78.90%	2000/04/30	SPS	SPESCOM	-59.19%
1999/10/31	LAR	LA GROUP	-79.04%	2000/01/31	PGR	PEREGRINE	-65.47%	2000/04/30	BSB	THE HOUSE OF BUSBY	-53.13%
1999/10/31	LAN	LA GROUP 'N'	-79.18%	2000/01/31	RAH	REAL AFRICA	-50.53%	2000/04/30	UCS	UCS GROUP	-68.33%
1999/10/31	MTL	MERCANTILE BANK	-72.51%	2000/01/31	SKJ	SEKUNJALO INVS.	-71.88%	2000/04/30	VLE	VALUE GROUP	-56.95%
1999/10/31	MST	MUSTEK	-74.59%	2000/01/31	STO	SETPOINT TECH.	-79.96%	2000/05/31	AFI	AFRICAN LIFE ASR.	-54.03%
1999/10/31	SKJ	SEKUNJALO INVS.	-73.44%	2000/01/31	SPS	SPESCOM	-76.19%	2000/05/31	BJM	BARNARD JAC.MELLET	-60.41%
1999/10/31	STO	SETPOINT TECH.	-89.38%	2000/01/31	BSB	THE HOUSE OF BUSBY	-58.11%	2000/05/31	DTC	DATATEC	-52.55%
1999/10/31	SPS	SPESCOM	-66.25%	2000/01/31	TRT	TOURISM INV.	-60.94%	2000/05/31	ECO	EDGARS CONS.STORES	-58.34%
1999/10/31	TIW	TIGER WHEELS	-62.37%	2000/01/31	UCS	UCS GROUP	-72.05%	2000/05/31	ERP	ERP.COM	-77.50%
1999/10/31	TRT	TOURISM INV.	-77.45%	2000/02/29	AFI	AFRICAN LIFE ASR.	-60.01%	2000/05/31	FRO	FRONTRANGE SLTN.	-88.89%
1999/10/31	UCS	UCS GROUP	-68.95%	2000/02/29	BJM	BARNARD JAC.MELLET	-68.44%	2000/05/31	IDI	IDION TECH.	-82.22%
1999/11/30	ADR	ADCORP	-53.03%	2000/02/29	BTG	BYTES TECH.GP.	-67.34%	2000/05/31	JSC	JASCO ELTN.	-62.49%
1999/11/30	ADH	ADVTECH	-79.93%	2000/02/29	CDZ	CADIZ	-62.23%	2000/05/31	MST	MUSTEK	-61.95%
1999/11/30	AFL	AFLEASE GD.& UR.RES.	-52.09%	2000/02/29	CSB	CASHBUILD	-51.28%	2000/05/31	NPN	NASPERS	-50.62%
1999/11/30	ABL	AFRICAN BANK INVS.	-56.30%	2000/02/29	CNC	CONCOR	-56.82%	2000/05/31	PGR	PEREGRINE	-53.03%
1999/11/30	AFI	AFRICAN LIFE ASR.	-86.28%	2000/02/29	DCT	DATACENTRIX	-55.00%	2000/05/31	SKJ	SEKUNJALO INVS.	-61.54%
1999/11/30	BJM	BARNARD JAC.MELLET	-70.38%	2000/02/29	DTC	DATATEC	-83.23%	2000/05/31	STO	SETPOINT TECH.	-74.83%
1999/11/30	BTG	BYTES TECH.GP.	-57.62%	2000/02/29	ECO	EDGARS CONS.STORES	-65.13%	2000/06/30	DTC	DATATEC	-53.42%
1999/11/30	CDZ	CADIZ	-58.16%	2000/02/29	EOH	ENTER.OUTSC.	-50.38%	2000/06/30	ECO	EDGARS CONS.STORES	-53.78%
1999/11/30	CSB	CASHBUILD	-54.95%	2000/02/29	ERP	ERP.COM	-78.70%	2000/06/30	ERP	ERP.COM	-77.50%
1999/11/30	CNC	CONCOR	-62.50%	2000/02/29	FOS	FOSCHINI	-58.87%	2000/06/30	FRO	FRONTRANGE SLTN.	-88.45%
1999/11/30	DCT	DATACENTRIX	-57.73%	2000/02/29	FRO	FRONTRANGE SLTN.	-95.61%	2000/06/30	IDI	IDION TECH.	-89.47%
1999/11/30	DTC	DATATEC	-57.20%	2000/02/29	IDI	IDION TECH.	-78.47%	2000/06/30	KAP	KAP INTL.	-56.90%
1999/11/30	DRD	DRD GOLD	-59.81%	2000/02/29	JSC	JASCO ELTN.	-80.74%	2000/06/30	PCN	PARACON	-50.00%
1999/11/30	ECO	EDGARS CONS.STORES	-65.38%	2000/02/29	LAR	LA GROUP	-84.00%	2000/06/30	PGR	PEREGRINE	-51.24%
1999/11/30	ERP	ERP.COM	-70.00%	2000/02/29	LAN	LA GROUP 'N'	-83.68%	2000/06/30	STO	SETPOINT TECH.	-74.21%
1999/11/30	FOS	FOSCHINI	-50.65%	2000/02/29	MTL	MERCANTILE BANK	-65.15%	2000/06/30	BSB	THE HOUSE OF BUSBY	-52.36%
1999/11/30	FRO	FRONTRANGE SLTN.	-72.12%	2000/02/29	MMG	MICROMEGA HDG.	-51.91%	2000/07/31	BRN	BRIMSTONE INV.'N'	-62.59%
1999/11/30	GDH	GOOD HOPE DIAMONDS	-59.80%	2000/02/29	MPC	MR PRICE GROUP	-56.87%	2000/07/31	DTC	DATATEC	-70.02%
1999/11/30	JSC	JASCO ELTN.	-71.61%	2000/02/29	MST	MUSTEK	-84.02%	2000/07/31	DDT	DIMENSION DATA HDG.(JSE)	-74.62%
1999/11/30	JCD	JCI	-50.00%	2000/02/29	NPN	NASPERS	-64.67%	2000/07/31	FRO	FRONTRANGE SLTN.	-88.95%
1999/11/30	LAR	LA GROUP	-77.12%	2000/02/29	OMN	OMNIA	-54.54%	2000/07/31	HCI	HOSKEN CONS.INV.	-53.77%
1999/11/30	LAN	LA GROUP 'N'	-80.57%	2000/02/29	PGR	PEREGRINE	-61.00%	2000/07/31	IDI	IDION TECH.	-94.15%
1999/11/30	MTL	MERCANTILE BANK	-69.16%	2000/02/29	SKJ	SEKUNJALO INVS.	-50.15%	2000/07/31	JSC	JASCO ELTN.	-51.52%
1999/11/30	MLA	MITTAL STEEL SA	-50.21%	2000/02/29	STO	SETPOINT TECH.	-76.91%	2000/07/31	JNC	JOHNNIC	-51.77%
1999/11/30	MPC	MR PRICE GROUP	-54.79%	2000/02/29	SPS	SPESCOM	-71.95%	2000/07/31	MTN	MTN GROUP	-55.05%
1999/11/30	MST	MUSTEK	-77.70%	2000/02/29	BSB	THE HOUSE OF BUSBY	-69.34%	2000/07/31	NPN	NASPERS	-54.12%
1999/11/30	PGR	PEREGRINE	-57.17%	2000/02/29	TRT	TOURISM INV.	-54.69%	2000/07/31	PCN	PARACON	-52.00%
1999/11/30	SKJ	SEKUNJALO INVS.	-77.32%	2000/02/29	UCS	UCS GROUP	-70.91%	2000/07/31	PGR	PEREGRINE	-60.88%
1999/11/30	STO	SETPOINT TECH.	-83.29%	2000/02/29	VLE	VALUE GROUP	-55.78%	2000/07/31	PIM	PRISM	-56.85%
1999/11/30	SOV	SOVEREIGN FOOD INVS.	-53.25%	2000/03/31	ADR	ADCORP	-51.79%	2000/07/31	STO	SETPOINT TECH.	-53.54%
1999/11/30	SPS	SPESCOM	-66.66%	2000/03/31	AFI	AFRICAN LIFE ASR.	-62.53%	2000/08/31	DTC	DATATEC	-76.11%
1999/11/30	TIW	TIGER WHEELS	-52.11%	2000/03/31	BJM	BARNARD JAC.MELLET	-73.19%	2000/08/31	DDT	DIMENSION DATA HDG.(JSE)	-79.41%
1999/11/30	TRT	TOURISM INV.	-74.95%	2000/03/31	BTG	BYTES TECH.GP.	-70.90%	2000/08/31	EOH	ENTER.OUTSC.	-62.83%
1999/11/30	UCS	UCS GROUP	-67.83%	2000/03/31	CDZ	CADIZ	-63.54%	2000/08/31	FRO	FRONTRANGE SLTN.	-87.03%
1999/12/31	ADH	ADVTECH	-76.15%	2000/03/31	CSB	CASHBUILD	-63.42%	2000/08/31	IDI	IDION TECH.	-93.47%
1999/12/31	ABL	AFRICAN BANK INVS.	-57.87%	2000/03/31	CNC	CONCOR	-57.50%	2000/08/31	JSC	JASCO ELTN.	-54.44%
1999/12/31	AFI	AFRICAN LIFE ASR.	-72.09%	2000/03/31	CNL	CONTROL INSTRUMENTS GP.	-50.34%	2000/08/31	KAP	KAP INTL.	-54.29%
1999/12/31	AMA	AMAL APPC.	-53.34%	2000/03/31	DCT	DATACENTRIX	-61.35%	2000/08/31	MTN	MTN GROUP	-51.25%
1999/12/31	BJM	BARNARD JAC.MELLET	-72.20%	2000/03/31	DTC	DATATEC	-85.78%	2000/08/31	MVG	MVELAPHANDA GROUP	-54.73%
1999/12/31	BTG	BYTES TECH.GP.	-65.48%	2000/03/31	ECO	EDGARS CONS.STORES	-69.74%	2000/08/31	NPN	NASPERS	-57.96%
1999/12/31	CDZ	CADIZ	-68.54%	2000/03/31	ERP	ERP.COM	-90.00%	2000/08/31	PCN	PARACON	-59.29%
1999/12/31	CSB	CASHBUILD	-62.25%	2000/03/31	FOS	FOSCHINI	-62.48%	2000/08/31	PGR	PEREGRINE	-53.35%
1999/12/31	CNC	CONCOR	-60.56%	2000/03/31	FRO	FRONTRANGE SLTN.	-93.59%	2000/08/31	PIM	PRISM	-56.43%
1999/12/31	DCT	DATACENTRIX	-69.71%	2000/03/31	IDI	IDION TECH.	-90.97%	2000/08/31	STO	SETPOINT TECH.	-50.00%
1999/12/31	DTC	DATATEC	-66.85%	2000/03/31	JSC	JASCO ELTN.	-80.77%	2000/08/31	BSB	THE HOUSE OF BUSBY	-52.99%
1999/12/31	DGC	DIGICORE	-59.94%	2000/03/31	KAP	KAP INTL.	-51.52%	2000/08/31	TPC	TRANSPACO	-56.25%
1999/12/31	ECO	EDGARS CONS.STORES	-67.67%	2000/03/31	LAR	LA GROUP	-74.26%	2000/08/31	UCS	UCS GROUP	-52.61%
1999/12/31	ERP	ERP.COM	-70.00%	2000/03/31	LAN	LA GROUP 'N'	-76.03%	2000/09/30	BRN	BRIMSTONE INV.'N'	-56.55%
1999/12/31	FOS	FOSCHINI	-60.22%	2000/03/31	MTL	MERCANTILE BANK	-64.54%	2000/09/30	CNL	CONTROL INSTRUMENTS GP.	-50.01%
1999/12/31	FRO	FRONTRANGE SLTN.	-84.23%	2000/03/31	MPC	MR PRICE GROUP	-58.77%	2000/09/30	DTC	DATATEC	-80.64%
1999/12/31	GDH	GOOD HOPE DIAMONDS	-59.80%	2000/03/31	MST	MUSTEK	-70.97%	2000/09/30	DDT	DIMENSION DATA HDG.(JSE)	-86.08%
1999/12/31	IDI	IDION TECH.	-50.00%	2000/03/31	MVG	MVELAPHANDA GROUP	-55.02%	2000/09/30	EOH	ENTER.OUTSC.	-60.59%
1999/12/31	JSC	JASCO ELTN.	-77.37%	2000/03/31	NPN	NASPERS	-66.42%	2000/09/30	FRO	FRONTRANGE SLTN.	-94.11%
1999/12/31	JCD	JCI	-51.78%	2000/03/31	OMN	OMNIA	-59.33%	2000/09/30	HCI	HOSKEN CONS.INV.	-51.84%
1999/12/31	KAP	KAP INTL.	-55.56%	2000/03/31	PCN	PARACON	-51.72%	2000/09/30	IDI	IDION TECH.	-95.47%
1999/12/31	LAR	LA GROUP	-84.00%	2000/03/31	PGR	PEREGRINE	-64.83%	2000/09/30	JSC	JASCO ELTN.	-53.51%
1999/12/31	LAN	LA GROUP 'N'	-84.72%	2000/03/31	PMN	PRIMEDIA 'N'	-52.47%	2000/09/30	JNC	JOHNNIC	-50.39%
1999/12/31	MTL	MERCANTILE BANK	-80.14%	2000/03/31	PIM	PRISM	-68.55%	2000/09/30	MTN	MTN GROUP	-54.08%
1999/12/31	MST	MUSTEK	-82.45%	2000/03/31	SKJ	SEKUNJALO INVS.	-70.06%	2000/09/30	MVG	MVELAPHANDA GROUP	-52.65%
1999/12/31	PGR	PEREGRINE	-53.77%	2000/03/31	STO	SETPOINT TECH.	-75.99%	2000/09/30	NPN	NASPERS	-74.81%
1999/12/31	SGG	SAGE GROUP	-54.97%	2000/03/31	SPS	SPESCOM	-72.14%	2000/09/30	PCN	PARACON	-69.03%
1999/12/31	SKJ	SEKUNJALO INVS	-62.60%	2000/03/31	BSB	THE HOUSE OF BUSBY	-65.25%	2000/09/30	PIM	PRISM	-65.71%
1999/12/31	STO	SETPOINT TECH.	-81.43%	2000/03/31	TIW	TIGER WHEELS	-53.34%	2000/09/30	TPC	TRANSPACO	-60.00%
1999/12/31	SPS	SPESCOM	-73.54%	2000/03/31	UCS	UCS GROUP	-68.96%	2000/09/30	VLE	VALUE GROUP	-58.30%
1999/12/31	TIW	TIGER WHEELS	-57.88%	2000/03/31	VLE	VALUE GROUP	-58.87%	2000/10/31	BRN	BRIMSTONE INV.'N'	-59.26%
1999/12/31	TRT	TOURISM INV.	-67.12%	2000/04/30	AFI	AFRICAN LIFE ASR.	-50.80%	2000/10/31	DTC	DATATEC	-80.04%
1999/12/31	UCS	UCS GROUP	-75.57%	2000/04/30	BJM	BARNARD JAC.MELLET	-70.38%	2000/10/31	DDT	DIMENSION DATA HDG.(JSE)	-84.26%
2000/01/31	ABL	AFRICAN BANK INVS.	-50.71%	2000/04/30	BTG	BYTES TECH.GP.	-65.60%	2000/10/31	ERP	ERP.COM	-50.00%
2000/01/31	AFI	AFRICAN LIFE ASR.	-86.75%	2000/04/30	CDZ	CADIZ	-52.43%	2000/10/31	FRO	FRONTRANGE SLTN.	-90.62%
2000/01/31	BJM	BARNARD JAC.MELLET	-59.59%	2000/04/30	CSB	CASHBUILD	-60.49%	2000/10/31	IDI	IDION TECH.	-95.53%
2000/01/31	BTG	BYTES TECH.GP.	-69.69%	2000/04/30	CNC	CONCOR	-50.77%	2000/10/31	NPN	NASPERS	-67.49%
2000/01/31	CDZ	CADIZ	-57.05%	2000/04/30	DTC	DATATEC	-73.43%	2000/10/31	PCN	PARACON	-60.83%

Appendix A.8. Sample Extreme Losers Sorted by Date

Continued.

Start Date	Code	Company Name	Total Return
2000/10/31	PIM	PRISM	-84.99%
2000/10/31	TPC	TRANSPACO	-67.65%
2000/11/30	DTC	DATATEC	-58.83%
2000/11/30	DDT	DIMENSION DATA HDG.(JSE)	-74.81%
2000/11/30	FRO	FRONTRANGE SLTN.	-71.09%
2000/11/30	IDI	IDION TECH.	-90.98%
2000/11/30	PCN	PARACON	-53.19%
2000/11/30	PIM	PRISM	-72.34%
2000/11/30	TDH	TRADEHOLD	-58.65%
2000/11/30	TPC	TRANSPACO	-53.85%
2000/12/31	CNL	CONTROL INSTRUMENTS GP.	-50.92%
2000/12/31	DDT	DIMENSION DATA HDG.(JSE)	-72.18%
2000/12/31	FRO	FRONTRANGE SLTN.	-74.39%
2000/12/31	IDI	IDION TECH.	-87.73%
2000/12/31	PCN	PARACON	-53.08%
2000/12/31	PIM	PRISM	-82.92%
2000/12/31	BSB	THE HOUSE OF BUSBY	-51.33%
2000/12/31	TPC	TRANSPACO	-64.03%
2001/01/31	DTC	DATATEC	-55.42%
2001/01/31	DDT	DIMENSION DATA HDG.(JSE)	-79.33%
2001/01/31	FRO	FRONTRANGE SLTN.	-67.28%
2001/01/31	HCI	HOSKEN CONS.INV.	-53.56%
2001/01/31	IDI	IDION TECH.	-93.84%
2001/01/31	NPN	NASPERS	-57.83%
2001/01/31	PIM	PRISM	-86.28%
2001/01/31	TDH	TRADEHOLD	-55.42%
2001/02/28	DDT	DIMENSION DATA HDG.(JSE)	-79.26%
2001/02/28	FRO	FRONTRANGE SLTN.	-77.64%
2001/02/28	GIJ	GIJIMA AST GROUP	-57.23%
2001/02/28	IDI	IDION TECH.	-89.52%
2001/02/28	JDG	JD GROUP	-56.92%
2001/02/28	NPN	NASPERS	-58.24%
2001/02/28	PCN	PARACON	-52.00%
2001/02/28	PIM	PRISM	-90.44%
2001/02/28	SGG	SAGE GROUP	-50.29%
2001/02/28	SPS	SPESCOM	-66.66%
2001/03/31	COM	COMAIR	-51.41%
2001/03/31	DDT	DIMENSION DATA HDG.(JSE)	-71.38%
2001/03/31	FRO	FRONTRANGE SLTN.	-63.64%
2001/03/31	GIJ	GIJIMA AST GROUP	-58.53%
2001/03/31	JDG	JD GROUP	-55.42%
2001/03/31	MTL	MERCANTILE BANK	-53.93%
2001/03/31	NPN	NASPERS	-53.71%
2001/03/31	PIM	PRISM	-83.69%
2001/03/31	SPS	SPESCOM	-70.76%
2001/03/31	VLE	VALUE GROUP	-51.30%
2001/04/30	DDT	DIMENSION DATA HDG.(JSE)	-74.90%
2001/04/30	GIJ	GIJIMA AST GROUP	-57.98%
2001/04/30	MTL	MERCANTILE BANK	-64.57%
2001/04/30	PIM	PRISM	-76.57%
2001/04/30	SPS	SPESCOM	-57.50%
2001/05/31	DDT	DIMENSION DATA HDG.(JSE)	-78.54%
2001/05/31	GIJ	GIJIMA AST GROUP	-53.65%
2001/05/31	JDG	JD GROUP	-51.04%
2001/05/31	MTL	MERCANTILE BANK	-79.72%
2001/05/31	MMG	MICROMEGA HDG.	-61.17%
2001/05/31	PIM	PRISM	-78.58%
2001/05/31	SPS	SPESCOM	-60.43%
2001/06/30	COM	COMAIR	-51.69%
2001/06/30	DDT	DIMENSION DATA HDG.(JSE)	-79.06%
2001/06/30	GIJ	GIJIMA AST GROUP	-66.02%
2001/06/30	JDG	JD GROUP	-52.61%
2001/06/30	MTL	MERCANTILE BANK	-76.85%
2001/06/30	MMG	MICROMEGA HDG.	-73.24%
2001/06/30	PIM	PRISM	-87.04%
2001/06/30	SPS	SPESCOM	-72.46%
2001/07/31	COM	COMAIR	-51.13%
2001/07/31	DDT	DIMENSION DATA HDG.(JSE)	-71.63%
2001/07/31	GIJ	GIJIMA AST GROUP	-72.81%
2001/07/31	JDG	JD GROUP	-50.41%
2001/07/31	KAP	KAP INTL.	-58.06%
2001/07/31	MTL	MERCANTILE BANK	-64.04%
2001/07/31	MMG	MICROMEGA HDG.	-77.40%
2001/07/31	PIM	PRISM	-90.45%
2001/07/31	SGG	SAGE GROUP	-51.75%
2001/07/31	SPS	SPESCOM	-75.00%
2001/08/31	ADR	ADCORP	-55.86%
2001/08/31	DTC	DATATEC	-53.33%
2001/08/31	DGC	DIGICORE	-52.27%
2001/08/31	DDT	DIMENSION DATA HDG.(JSE)	-72.86%
2001/08/31	GIJ	GIJIMA AST GROUP	-78.45%
2001/08/31	JDG	JD GROUP	-57.48%
2001/08/31	MTL	MERCANTILE BANK	-76.61%
2001/08/31	MMG	MICROMEGA HDG.	-74.69%
2001/08/31	PIM	PRISM	-94.07%
2001/08/31	SGG	SAGE GROUP	-54.94%
2001/08/31	SPS	SPESCOM	-76.37%
2001/09/30	ADR	ADCORP	-51.86%
2001/09/30	BCX	BUSINESS CONNEXION GROUP	-55.47%
2001/09/30	DDT	DIMENSION DATA HDG.(JSE)	-69.89%
2001/09/30	GIJ	GIJIMA AST GROUP	-79.99%
2001/09/30	JDG	JD GROUP	-52.92%
2001/09/30	MCU	M CUBED HOLDINGS	-50.73%
2001/09/30	MTL	MERCANTILE BANK	-71.57%
2001/09/30	MMG	MICROMEGA HDG.	-81.02%
2001/09/30	PIM	PRISM	-94.55%
2001/09/30	SGG	SAGE GROUP	-57.69%
2001/09/30	SPS	SPESCOM	-79.33%
2001/10/31	BCX	BUSINESS CONNEXION GROUP	-51.80%
2001/10/31	DDT	DIMENSION DATA HDG.(JSE)	-65.36%
2001/10/31	GIJ	GIJIMA AST GROUP	-84.99%
2001/10/31	MTL	MERCANTILE BANK	-73.68%
2001/10/31	PIM	PRISM	-77.72%
2001/10/31	SGG	SAGE GROUP	-70.43%
2001/10/31	SPS	SPESCOM	-62.98%
2001/11/30	DDT	DIMENSION DATA HDG.(JSE)	-71.32%
2001/11/30	GIJ	GIJIMA AST GROUP	-88.29%
2001/11/30	KAP	KAP INTL.	-58.06%
2001/11/30	MTL	MERCANTILE BANK	-61.45%
2001/11/30	MMG	MICROMEGA HDG.	-51.53%
2001/11/30	PIM	PRISM	-88.12%
2001/11/30	SGG	SAGE GROUP	-65.04%
2001/11/30	SPS	SPESCOM	-66.53%
2001/12/31	BCX	BUSINESS CONNEXION GROUP	-54.31%
2001/12/31	DTC	DATATEC	-66.75%
2001/12/31	DDT	DIMENSION DATA HDG.(JSE)	-73.36%
2001/12/31	GIJ	GIJIMA AST GROUP	-88.29%
2001/12/31	MCU	M CUBED HOLDINGS	-53.43%
2001/12/31	MMG	MICROMEGA HDG.	-57.56%
2001/12/31	PIM	PRISM	-80.59%
2001/12/31	SGG	SAGE GROUP	-72.54%
2001/12/31	SPS	SPESCOM	-63.43%
2002/01/31	DTC	DATATEC	-67.62%
2002/01/31	DDT	DIMENSION DATA HDG.(JSE)	-71.77%
2002/01/31	EXL	EXCELLERATE HDG.	-50.12%
2002/01/31	GIJ	GIJIMA AST GROUP	-89.48%
2002/01/31	MCU	M CUBED HOLDINGS	-57.98%
2002/01/31	MMG	MICROMEGA HDG.	-74.44%
2002/01/31	PIM	PRISM	-77.07%
2002/01/31	SGG	SAGE GROUP	-67.12%
2002/01/31	SPS	SPESCOM	-59.85%
2002/02/28	DTC	DATATEC	-71.74%
2002/02/28	DDT	DIMENSION DATA HDG.(JSE)	-73.10%
2002/02/28	GIJ	GIJIMA AST GROUP	-87.29%
2002/02/28	MCU	M CUBED HOLDINGS	-56.96%
2002/02/28	MMG	MICROMEGA HDG.	-81.82%
2002/02/28	PIM	PRISM	-65.80%
2002/02/28	SGG	SAGE GROUP	-62.93%
2002/03/31	AMS	ANGLO AMERICAN PLAT.	-50.41%
2002/03/31	DTC	DATATEC	-77.27%
2002/03/31	DDT	DIMENSION DATA HDG.(JSE)	-79.89%
2002/03/31	GIJ	GIJIMA AST GROUP	-89.64%
2002/03/31	LON	LONMIN (JSE)	-54.05%
2002/03/31	MCU	M CUBED HOLDINGS	-50.86%
2002/03/31	MMG	MICROMEGA HDG.	-81.80%
2002/03/31	PIM	PRISM	-68.39%
2002/03/31	RCH	RICHEMONT SECS. (JSE)	-59.19%
2002/03/31	SGG	SAGE GROUP	-76.40%
2002/04/30	AMS	ANGLO AMERICAN PLAT.	-57.44%
2002/04/30	DTC	DATATEC	-75.56%
2002/04/30	DDT	DIMENSION DATA HDG.(JSE)	-80.75%
2002/04/30	DRD	DRD GOLD	-62.98%
2002/04/30	EXL	EXCELLERATE HDG.	-50.00%
2002/04/30	GIJ	GIJIMA AST GROUP	-91.45%
2002/04/30	LON	LONMIN (JSE)	-53.18%
2002/04/30	MCU	M CUBED HOLDINGS	-58.11%
2002/04/30	MMG	MICROMEGA HDG.	-84.87%
2002/04/30	PIM	PRISM	-79.07%
2002/04/30	RCH	RICHEMONT SECS. (JSE)	-54.22%
2002/04/30	SGG	SAGE GROUP	-78.40%
2002/04/30	SPS	SPESCOM	-50.59%
2002/05/31	BPL	BARPLATS INVS.	-51.63%
2002/05/31	DTC	DATATEC	-66.19%
2002/05/31	DDT	DIMENSION DATA HDG.(JSE)	-58.54%
2002/05/31	DRD	DRD GOLD	-60.02%
2002/05/31	EXL	EXCELLERATE HDG.	-50.12%
2002/05/31	GIJ	GIJIMA AST GROUP	-87.10%
2002/05/31	MCU	M CUBED HOLDINGS	-59.45%
2002/05/31	MMG	MICROMEGA HDG.	-64.38%
2002/05/31	PIM	PRISM	-69.03%
2002/05/31	SGG	SAGE GROUP	-74.95%
2002/06/30	BPL	BARPLATS INVS.	-58.39%
2002/06/30	DTC	DATATEC	-58.53%
2002/06/30	DDT	DIMENSION DATA HDG.(JSE)	-58.92%
2002/06/30	DRD	DRD GOLD	-55.10%
2002/06/30	EXL	EXCELLERATE HDG.	-71.86%
2002/06/30	GIJ	GIJIMA AST GROUP	-81.23%
2002/06/30	MES	MESSINA	-51.61%
2002/06/30	SGG	SAGE GROUP	-69.72%
2002/07/31	BPL	BARPLATS INVS.	-52.46%
2002/07/31	EXL	EXCELLERATE HDG.	-63.10%
2002/07/31	GIJ	GIJIMA AST GROUP	-78.90%
2002/07/31	SGG	SAGE GROUP	-50.36%
2002/08/31	BPL	BARPLATS INVS.	-58.67%
2002/08/31	DRD	DRD GOLD	-52.04%
2002/08/31	EXL	EXCELLERATE HDG.	-71.43%
2002/08/31	GIJ	GIJIMA AST GROUP	-78.47%
2002/09/30	DRD	DRD GOLD	-54.99%
2002/09/30	EXL	EXCELLERATE HDG.	-52.15%
2002/09/30	GIJ	GIJIMA AST GROUP	-67.26%
2002/10/31	BPL	BARPLATS INVS.	-59.80%
2002/10/31	EXL	EXCELLERATE HDG.	-61.11%
2002/10/31	MMG	MICROMEGA HDG.	-61.02%
2002/11/30	BPL	BARPLATS INVS.	-77.09%
2002/11/30	GIJ	GIJIMA AST GROUP	-50.25%
2002/12/31	BPL	BARPLATS INVS.	-77.97%
2002/12/31	CDZ	CADIZ	-93.42%
2002/12/31	KAP	KAP INTL.	-50.00%
2003/01/31	AFL	AFLEASE GD.& UR.RES.	-58.27%
2003/01/31	BPL	BARPLATS INVS.	-73.53%
2003/01/31	CDZ	CADIZ	-93.31%
2003/01/31	KAP	KAP INTL.	-65.22%
2003/02/28	CDZ	CADIZ	-93.81%
2003/03/31	AFL	AFLEASE GD.& UR.RES.	-50.59%
2003/03/31	CDZ	CADIZ	-93.45%
2003/04/30	CDZ	CADIZ	-93.67%
2003/05/31	CDZ	CADIZ	-93.02%
2003/05/31	KAP	KAP INTL.	-50.00%
2003/06/30	AFL	AFLEASE GD.& UR.RES.	-70.69%
2003/06/30	CDZ	CADIZ	-93.02%
2003/06/30	KAP	KAP INTL.	-57.14%
2003/07/31	AFL	AFLEASE GD.& UR.RES.	-72.00%
2003/07/31	CDZ	CADIZ	-94.12%
2003/07/31	RNG	RANDGOLD & EXP.	-55.82%
2003/08/31	AFL	AFLEASE GD.& UR.RES.	-73.28%
2003/08/31	CDZ	CADIZ	-93.73%
2003/08/31	RNG	RANDGOLD & EXP.	-62.61%
2003/09/30	AFL	AFLEASE GD.& UR.RES.	-70.73%
2003/09/30	CDZ	CADIZ	-93.88%
2003/09/30	JCD	JCI	-54.95%
2003/09/30	MES	MESSINA	-54.66%
2003/09/30	RNG	RANDGOLD & EXP.	-58.54%
2003/10/31	AFL	AFLEASE GD.& UR.RES.	-63.97%
2003/10/31	CDZ	CADIZ	-94.48%
2003/10/31	GIJ	GIJIMA AST GROUP	-51.05%
2003/10/31	JCD	JCI	-59.39%
2003/10/31	KAP	KAP INTL.	-54.55%
2003/10/31	MES	MESSINA	-57.81%
2003/10/31	RNG	RANDGOLD & EXP.	-53.97%
2003/11/30	AFL	AFLEASE GD.& UR.RES.	-62.89%
2003/11/30	CDZ	CADIZ	-93.13%
2003/11/30	JCD	JCI	-56.15%
2003/11/30	MES	MESSINA	-58.06%
2003/11/30	MVL	MVELAPHANDA RES.	-64.54%
2003/11/30	RNG	RANDGOLD & EXP.	-65.96%
2003/12/31	DRD	DRD GOLD	-60.19%
2003/12/31	HAR	HARMONY GOLD MNG.	-52.47%
2003/12/31	JCD	JCI	-65.64%
2003/12/31	MES	MESSINA	-61.29%
2003/12/31	RNG	RANDGOLD & EXP.	-70.86%

Appendix A.9. Sample Extreme Losers Sorted by Return

The table lists 12 month periods of extreme performance for all extreme losers on the JSE Securities Exchange from January 1995 until December 2004 included in this study. An extreme loser is defined as a stock which at least halves in a 12 month period. In addition to the names of all extreme performers, the table lists the share codes for each, the start date of the 12 month period of extreme performance, as well as the return over each of these periods. The lists are sorted by return.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
-95.61%	FRO	FRONTRANGE SLTN.	2000/02/29	-84.04%	LAN	LA GROUP 'N'	2000/01/31	-78.77%	CUL	CULLINAN	1998/11/30
-95.53%	IDI	IDION TECH.	2000/10/31	-84.02%	MST	MUSTEK	2000/02/29	-78.76%	DRD	DRD GOLD	1996/10/31
-95.49%	CCT	CONNECTION GP.	1998/07/31	-84.00%	LAR	LA GROUP	2000/02/29	-78.69%	BRC	BRANDCORP	1998/05/31
-95.47%	IDI	IDION TECH.	2000/09/30	-84.00%	LAR	LA GROUP	1999/12/31	-78.67%	GDH	GOOD HOPE DIAMONDS	1999/08/31
-94.55%	PIM	PRISM	2001/09/30	-83.90%	GDH	GOOD HOPE DIAMONDS	1998/11/30	-78.67%	SBL	SABLE	1997/12/31
-94.46%	CDZ	CADIZ	2003/10/31	-83.73%	GDH	GOOD HOPE DIAMONDS	1999/01/31	-78.64%	ENV	ENVIROSERV	1997/10/31
-94.15%	IDI	IDION TECH.	2000/07/31	-83.69%	PIM	PRISM	2001/03/31	-78.58%	PIM	PRISM	2001/05/31
-94.12%	CDZ	CADIZ	2003/07/31	-83.68%	LAN	LA GROUP 'N	2000/02/29	-78.54%	DDT	DIMENSION DATA HDG.(JSE)	2001/05/31
-94.11%	FRO	FRONTRANGE SLTN.	2000/09/30	-83.38%	ADH	ADVTECH	1999/04/30	-78.47%	GIJ	GIJIMA AST GROUP	2002/08/31
-94.07%	PIM	PRISM	2001/08/31	-83.38%	JSC	JASCO ELTN.	1999/04/30	-78.45%	GIJ	GIJIMA AST GROUP	2001/08/31
-93.88%	CDZ	CADIZ	2003/09/30	-83.29%	STO	SETPOINT TECH.	1999/11/30	-78.40%	SGG	SAGE GROUP	2002/04/30
-93.84%	IDI	IDION TECH.	2001/01/31	-83.23%	DTC	DATATEC	2000/02/29	-78.38%	BTG	BYTES TECH.GP.	1998/10/31
-93.81%	CDZ	CADIZ	2003/02/28	-83.11%	CCT	CONNECTION GP.	1998/04/30	-78.16%	ENV	ENVIROSERV	1997/03/31
-93.73%	CDZ	CADIZ	2003/08/31	-83.04%	LAR	LA GROUP	2000/01/31	-77.97%	BPL	BARPLATS INVS.	2002/12/31
-93.67%	CDZ	CADIZ	2003/04/30	-82.92%	PIM	PRISM	2000/12/31	-77.95%	ECO	EDGARS CONS.STORES	1997/12/31
-93.59%	FRO	FRONTRANGE SLTN.	2000/03/31	-82.91%	CUL	CULLINAN	1996/04/30	-77.89%	CUL	CULLINAN	1998/04/30
-93.47%	IDI	IDION TECH.	2000/08/31	-82.86%	ERP	ERP.COM	2000/01/31	-77.89%	PMN	PRIMEDIA 'N'	1998/05/31
-93.45%	CDZ	CADIZ	2003/03/31	-82.70%	AMA	AMAL.APPC.	1998/05/31	-77.75%	RNG	RANDGOLD & EXP.	1997/09/30
-93.42%	CDZ	CADIZ	2002/12/31	-82.61%	BRC	BRANDCORP	1998/08/30	-77.72%	PIM	PRISM	2001/10/31
-93.31%	CDZ	CADIZ	2003/01/31	-82.50%	GDH	GOOD HOPE DIAMONDS	1998/09/30	-77.70%	MST	MUSTEK	1999/11/30
-93.13%	CDZ	CADIZ	2003/11/30	-82.47%	GDH	GOOD HOPE DIAMONDS	1998/12/31	-77.65%	BEL	BELL EQUIPMENT	1997/08/31
-93.02%	CDZ	CADIZ	2003/05/31	-82.47%	STO	SETPOINT TECH.	1999/09/30	-77.64%	FRO	FRONTRANGE SLTN.	2001/02/28
-93.02%	CDZ	CADIZ	2003/06/30	-82.45%	MST	MUSTEK	1999/12/31	-77.62%	LAR	LA GROUP	1999/05/31
-93.00%	CCT	CONNECTION GP.	1998/06/30	-82.22%	IDI	IDION TECH.	2000/05/31	-77.56%	PMA	PRIMEDIA	1998/05/31
-93.00%	CCT	CONNECTION GP.	1998/10/31	-82.19%	RBW	RAINBOW CHICKEN	1997/02/28	-77.55%	ENV	ENVIROSERV	1997/07/31
-91.63%	GDH	GOOD HOPE DIAMONDS	1999/04/30	-82.14%	RNG	RANDGOLD & EXP.	1997/05/31	-77.50%	ERP	ERP.COM	2000/05/31
-91.45%	GIJ	GIJIMA AST GROUP	2002/04/30	-82.10%	ECO	EDGARS CONS.STORES	1997/08/31	-77.50%	ERP	ERP.COM	2000/06/30
-91.14%	CCT	CONNECTION GP.	1998/08/31	-82.08%	CUL	CULLINAN	1999/02/28	-77.50%	RNG	RANDGOLD & EXP.	1997/08/30
-90.98%	IDI	IDION TECH.	2000/11/30	-82.00%	CUL	CULLINAN	1996/05/31	-77.48%	GDH	GOOD HOPE DIAMONDS	1998/10/31
-90.98%	FRO	FRONTRANGE SLTN.	2000/04/30	-81.84%	DAW	DS.& WHSG.NETWORK	1996/09/30	-77.46%	WNH	WINHOLD	1998/03/31
-90.97%	IDI	IDION TECH.	2000/03/31	-81.84%	JSC	JASCO ELTN.	1999/02/28	-77.45%	TRT	TOURISM INV.	1999/10/31
-90.96%	FRO	FRONTRANGE SLTN.	2000/01/31	-81.82%	JSC	JASCO ELTN.	1999/10/31	-77.40%	MMG	MICROMEGA HDG.	2001/07/31
-90.82%	FRO	FRONTRANGE SLTN.	2000/10/31	-81.82%	HWN	HOWDEN AFRICA	1997/10/31	-77.37%	BTG	BYTES TECH.GP.	1998/12/31
-90.45%	PIM	PRISM	2001/07/31	-81.82%	MMG	MICROMEGA HDG.	2002/02/28	-77.37%	JSC	JASCO ELTN.	1999/12/31
-90.44%	PIM	PRISM	2001/02/28	-81.78%	KAP	KAP INTL.	1997/08/30	-77.37%	JSC	JASCO ELTN.	1998/11/30
-90.14%	STO	SETPOINT TECH.	1999/07/31	-81.66%	CCT	CONNECTION GP.	1999/01/31	-77.32%	SKJ	SEKUNJALO INVS.	1999/11/30
-90.13%	STO	SETPOINT TECH.	1999/06/30	-81.60%	MMG	MICROMEGA HDG.	2002/03/31	-77.29%	BEL	BELL EQUIPMENT	1997/03/31
-90.00%	ERP	ERP.COM	2000/03/31	-81.43%	STO	SETPOINT TECH.	1999/12/31	-77.27%	DTC	DATATEC	2002/03/31
-89.85%	JSC	JASCO ELTN.	1999/06/30	-81.36%	CUL	CULLINAN	1999/01/31	-77.26%	DAW	DS.& WHSG.NETWORK	1998/11/30
-89.64%	GIJ	GIJIMA AST GROUP	2002/03/31	-81.24%	RNG	RANDGOLD & EXP.	1996/11/30	-77.14%	SPS	SPESCOM	1999/06/30
-89.52%	IDI	IDION TECH.	2001/02/28	-81.23%	GIJ	GIJIMA AST GROUP	2002/06/30	-77.12%	LAR	LA GROUP	1999/11/30
-89.48%	GIJ	GIJIMA AST GROUP	2002/01/31	-81.18%	BRN	BRIMSTONE INV.'N'	1998/08/31	-77.11%	ADH	ADVTECH	1999/07/31
-89.47%	CCT	CONNECTION GP.	1998/09/30	-81.14%	BEL	BELL EQUIPMENT	1997/06/30	-77.11%	CNL	CONTROL INSTRUMENTS GP.	1997/02/28
-89.47%	IDI	IDION TECH.	2000/06/30	-81.12%	HWN	HOWDEN AFRICA	1997/11/30	-77.09%	BPL	BARPLATS INVS.	2002/11/30
-89.39%	STO	SETPOINT TECH.	1999/10/31	-81.02%	MMG	MICROMEGA HDG.	2001/09/30	-77.07%	PIM	PRISM	2002/01/31
-89.13%	STO	SETPOINT TECH.	1999/03/31	-81.02%	JSC	JASCO ELTN.	1999/03/31	-77.02%	ENV	ENVIROSERV	1997/06/30
-88.95%	FRO	FRONTRANGE SLTN.	2000/07/31	-81.02%	AMA	AMAL.APPC.	1998/04/30	-76.91%	STO	SETPOINT TECH.	2000/02/29
-88.89%	FRO	FRONTRANGE SLTN.	2000/05/31	-81.02%	DRD	DRD GOLD	1996/11/30	-76.85%	MTL	MERCANTILE BANK	2001/06/30
-88.45%	FRO	FRONTRANGE SLTN.	2000/06/30	-80.89%	JCD	JCI	1997/08/31	-76.81%	CUL	CULLINAN	1996/06/30
-88.41%	STO	SETPOINT TECH.	1999/05/31	-80.77%	JSC	JASCO ELTN.	2000/03/31	-76.77%	LAR	LA GROUP	1999/07/31
-88.29%	GIJ	GIJIMA AST GROUP	2001/11/30	-80.75%	DDT	DIMENSION DATA HDG.(JSE)	2002/04/30	-76.70%	ERP	ERP.COM	2000/02/29
-88.29%	GIJ	GIJIMA AST GROUP	2001/12/31	-80.74%	JSC	JASCO ELTN.	2000/02/29	-76.61%	CPA	CORPCAPITAL	1995/03/31
-88.18%	STO	SETPOINT TECH.	1999/02/28	-80.72%	RNG	RANDGOLD & EXP.	1997/03/31	-76.61%	MTL	MERCANTILE BANK	2001/06/31
-88.12%	PIM	PRISM	2001/11/30	-80.64%	DTC	DATATEC	2000/09/30	-76.61%	MOB	MOBILE INDUSTRIES	1998/12/31
-88.06%	GDH	GOOD HOPE DIAMONDS	1999/02/28	-80.59%	KAP	KAP INTL.	1997/05/31	-76.57%	PIM	PRISM	2001/04/30
-88.03%	BTG	BYTES TECH.GP.	1999/05/31	-80.59%	PIM	PRISM	2001/12/31	-76.50%	STO	SETPOINT TECH.	2000/04/30
-88.01%	CUL	CULLINAN	1998/09/30	-80.57%	LAN	LA GROUP 'N'	1999/11/30	-76.47%	IDI	IDION TECH.	2000/02/29
-87.73%	IDI	IDION TECH.	2000/12/31	-80.34%	KAP	KAP INTL.	1997/11/30	-76.42%	LAR	LA GROUP	1999/09/30
-87.32%	BTG	BYTES TECH.GP.	1999/08/31	-80.24%	RNG	RANDGOLD & EXP.	1997/01/31	-76.40%	ENV	ENVIROSERV	1997/05/31
-87.29%	GIJ	GIJIMA AST GROUP	2002/02/28	-80.23%	ENV	ENVIROSERV	1997/08/31	-76.40%	SGG	SAGE GROUP	2002/03/31
-87.10%	GIJ	GIJIMA AST GROUP	2002/05/31	-80.18%	RNG	RANDGOLD & EXP.	1996/12/31	-76.37%	SPS	SPESCOM	2001/08/31
-87.04%	PIM	PRISM	2001/08/30	-80.15%	TRT	TOURISM INV.	1999/06/30	-76.28%	ENV	ENVIROSERV	1997/02/28
-87.03%	FRO	FRONTRANGE SLTN.	2000/08/31	-80.04%	DTC	DATATEC	2000/10/31	-76.25%	HDC	HUDACO	1997/09/30
-86.98%	CCT	CONNECTION GP.	1998/11/30	-80.00%	ADH	ADVTECH	1999/09/30	-76.25%	CUL	CULLINAN	1996/02/29
-86.89%	JSC	JASCO ELTN.	1999/05/31	-80.00%	ERP	ERP.COM	2000/04/30	-76.21%	ECO	EDGARS CONS.STORES	1997/11/30
-86.72%	CCT	CONNECTION GP.	1998/05/31	-80.00%	DRD	DRD GOLD	1996/12/31	-76.19%	SPS	SPESCOM	2000/01/31
-86.65%	ENV	ENVIROSERV	1997/09/30	-79.99%	GIJ	GIJIMA AST GROUP	2001/09/30	-76.16%	ECO	EDGARS CONS.STORES	1997/10/31
-86.53%	BTG	BYTES TECH.GP.	1999/09/30	-79.96%	ADH	ADVTECH	1999/10/31	-76.15%	ADH	ADVTECH	1999/12/31
-86.36%	CUL	CULLINAN	1996/03/31	-79.96%	STO	SETPOINT TECH.	2000/01/31	-76.14%	ARI	AFN.RAINBOW MRLS.	1997/08/31
-86.29%	BTG	BYTES TECH.GP.	1999/04/30	-79.93%	ADH	ADVTECH	1999/11/30	-76.12%	MTX	METOREX	1996/09/30
-86.28%	PIM	PRISM	2001/01/31	-79.89%	DDT	DIMENSION DATA HDG.(JSE)	2002/03/31	-76.11%	DTC	DATATEC	2000/08/31
-86.14%	CNL	CONTROL INSTRUMENTS GP.	1997/01/31	-79.81%	DAW	DS.& WHSG.NETWORK	1996/10/31	-76.11%	BTG	BYTES TECH.GP.	1998/11/30
-86.08%	DDT	DIMENSION DATA HDG.(JSE)	2000/09/30	-79.72%	MTL	MERCANTILE BANK	2001/05/31	-76.10%	RBW	RAINBOW CHICKEN	1998/12/31
-86.02%	KAP	KAP INTL.	1997/08/31	-79.72%	DAW	DS.& WHSG.NETWORK	1996/07/31	-76.03%	LAN	LA GROUP 'N'	2000/03/31
-85.85%	BTG	BYTES TECH.GP.	1999/07/31	-79.64%	RBW	RAINBOW CHICKEN	1997/03/31	-75.99%	SBL	SABLE	1997/08/30
-85.78%	DTC	DATATEC	2000/03/31	-79.62%	CCT	CONNECTION GP.	1999/02/28	-75.99%	STO	SETPOINT TECH.	2000/03/31
-85.53%	STO	SETPOINT TECH.	1999/04/30	-79.47%	KAP	KAP INTL.	1997/07/31	-75.95%	AMA	AMAL.APPC.	1998/06/30
-85.26%	KAP	KAP INTL.	1997/09/30	-79.41%	DDT	DIMENSION DATA HDG.(JSE)	2000/08/31	-75.89%	BTG	BYTES TECH.GP.	1999/02/28
-85.13%	WNH	WINHOLD	1997/08/31	-79.38%	JSC	JASCO ELTN.	1999/07/31	-75.74%	GRF	GROUP FIVE	1997/08/31
-85.09%	GDH	GOOD HOPE DIAMONDS	1999/03/31	-79.33%	DDT	DIMENSION DATA HDG.(JSE)	2001/01/31	-75.70%	LAN	LA GROUP 'N'	1999/06/30
-85.02%	DAW	DS.& WHSG NETWORK	1997/02/28	-79.33%	ADH	ADVTECH	1999/03/31	-75.68%	MOB	MOBILE INDUSTRIES	1997/01/31
-84.99%	PIM	PRISM	2000/10/31	-79.33%	SPS	SPESCOM	2001/09/30	-75.67%	ECO	EDGARS CONS STORES	1997/07/31
-84.98%	GIJ	GIJIMA AST GROUP	2001/10/31	-79.27%	CUL	CULLINAN	1998/12/31	-75.64%	SBL	SABLE	1997/10/31
-84.87%	MMG	MICROMEGA HDG.	2002/04/30	-79.26%	DDT	DIMENSION DATA HDG.(JSE)	2001/02/28	-75.63%	PMA	PRIMEDIA	1998/07/31
-84.78%	CUL	CULLINAN	1998/10/31	-79.23%	DAW	DS.& WHSG NETWORK	1997/01/31	-75.57%	UCS	UCS GROUP	1999/12/31
-84.75%	JSC	JASCO ELTN.	2000/04/30	-79.18%	LAN	LA GROUP 'N'	1999/10/31	-75.56%	DTC	DATATEC	2002/04/30
-84.72%	LAN	LA GROUP 'N'	1999/12/31	-79.14%	LAR	LA GROUP	1999/06/30	-75.51%	LAN	LA GROUP 'N'	1999/07/31
-84.68%	KAP	KAP INTL.	1997/01/31	-79.07%	PIM	PRISM	2002/04/30	-75.49%	ADH	ADVTECH	1999/02/28
-84.58%	RBW	RAINBOW CHICKEN	1997/01/31	-79.06%	DDT	DIMENSION DATA HDG.(JSE)	2001/06/30	-75.49%	MOB	MOBILE INDUSTRIES	1998/11/30
-84.54%	CCT	CONNECTION GP.	1998/12/31	-79.04%	LAR	LA GROUP	1999/10/31	-75.47%	AMA	AMAL.APPC.	1998/03/31
-84.41%	STO	SETPOINT TECH.	1999/08/31	-79.00%	JCD	JCI	1997/07/31	-75.46%	HDC	HUDACO	1997/08/31
-84.30%	BTG	BYTES TECH.GP.	1999/03/31	-78.94%	BRC	BRANDCORP	1998/04/30	-75.46%	HWN	HOWDEN AFRICA	1997/12/31
-84.26%	DDT	DIMENSION DATA HDG.(JSE)	2000/10/31	-78.93%	ADH	ADVTECH	1999/05/31	-75.22%	LAN	LA GROUP 'N'	1999/09/30
-84.25%	BRN	BRIMSTONE INV.'N'	1998/07/31	-78.90%	MST	MUSTEK	2000/01/31	-75.14%	DLV	DORBYL	1997/08/31
-84.23%	FRO	FRONTRANGE SLTN.	1999/12/31	-78.90%	GIJ	GIJIMA AST GROUP	2002/07/31	-75.10%	GDH	GOOD HOPE DIAMONDS	1999/06/30
-84.17%	BTG	BYTES TECH.GP.	1999/06/30	-78.88%	BEL	BELL EQUIPMENT	1997/07/31	-75.06%	SBL	SABLE	1998/03/31
-84.15%	ECO	EDGARS CONS.STORES	1997/09/30	-78.79%	KAP	KAP INTL.	1997/10/31	-75.00%	SPS	SPESCOM	2001/07/31
-84.11%	RNG	RANDGOLD & EXP.	1997/02/28	-78.79%	RNG	RANDGOLD & EXP.	1997/08/31	-74.95%	SGG	SAGE GROUP	2002/05/31

Appendix A.9. Sample Extreme Losers Sorted by Return

Continued.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
-74.95%	TRT	TOURISM INV.	1999/11/30	-71.74%	DTC	DATATEC	2002/02/28	-68.64%	JCD	JCI	1997/09/30
-74.93%	STO	SETPOINT TECH.	2000/05/31	-71.68%	ADH	ADVTECH	1999/01/31	-68.55%	PIM	PRISM	2000/03/31
-74.92%	CUL	CULLINAN	1999/05/31	-71.64%	ART	ARGENT INDUSTRIAL	1997/09/30	-68.54%	CDZ	CADIZ	1999/12/31
-74.90%	DDT	DIMENSION DATA HDG.(JSE)	2001/04/30	-71.63%	DDT	DIMENSION DATA HDG.(JSE)	2001/07/31	-68.50%	INM	INMINS	1997/09/30
-74.88%	DRD	DRD GOLD	1996/07/31	-71.61%	JSC	JASCO ELTN.	1999/11/30	-68.50%	BTG	BYTES TECH.GP.	1999/10/31
-74.85%	JSC	JASCO ELTN.	2000/01/31	-71.57%	SOV	SOVEREIGN FOOD INVS.	1999/06/30	-68.45%	CUL	CULLINAN	1997/02/28
-74.81%	DDT	DIMENSION DATA HDG.(JSE)	2000/11/30	-71.57%	MTL	MERCANTILE BANK	2001/09/30	-68.44%	BJM	BARNARD JAC.MELLET	2000/02/29
-74.81%	NPN	NASPERS	2000/09/30	-71.54%	SOV	SOVEREIGN FOOD INVS.	1999/05/31	-68.39%	PIM	PRISM	2002/03/31
-74.80%	HWN	HOWDEN AFRICA	1998/01/31	-71.43%	EXL	EXCELLERATE HDG.	2002/08/31	-68.39%	SCN	SCHARRIG MINING	1997/08/31
-74.78%	GDH	GOOD HOPE DIAMONDS	1995/01/31	-71.38%	DDT	DIMENSION DATA HDG.(JSE)	2001/03/31	-68.39%	AMA	AMAL.APPC.	1998/07/31
-74.69%	MMG	MICROMEGA HDG.	2001/08/31	-71.35%	SPS	SPESCOM	1999/04/30	-68.38%	CSB	CASHBUILD	1995/07/31
-74.62%	DDT	DIMENSION DATA HDG.(JSE)	2000/07/31	-71.33%	GDH	GOOD HOPE DIAMONDS	1999/07/31	-68.37%	MBN	MOBILE INDUSTRIES 'N'	1998/03/31
-74.60%	PMN	PRIMEDIA 'N'	1998/06/30	-71.32%	DDT	DIMENSION DATA HDG.(JSE)	2001/11/30	-68.33%	UCS	UCS GROUP	2000/04/30
-74.58%	MST	MUSTEK	1999/10/31	-71.19%	ECO	EDGARS CONS.STORES	1998/01/31	-68.32%	CNC	CONCOR	2000/01/31
-74.58%	MOB	MOBILE INDUSTRIES	1996/10/31	-71.11%	RNG	RANDGOLD & EXP.	1996/10/31	-68.31%	ARI	AFN.RAINBOW MRLS.	1997/07/31
-74.52%	SCN	SCHARRIG MINING	1996/01/31	-71.09%	FRO	FRONTRANGE SLTN.	2000/11/30	-68.27%	ARI	AFN.RAINBOW MRLS.	1997/10/31
-74.51%	JCD	JCI	1997/06/30	-71.05%	SKJ	SEKUNJALO INVS.	1999/07/31	-68.23%	PAM	PALABORA MINING	1997/08/31
-74.44%	MMG	MICROMEGA HDG.	2002/01/31	-70.97%	MST	MUSTEK	2000/03/31	-68.21%	CUL	CULLINAN	1998/12/31
-74.42%	STO	SETPOINT TECH.	1999/01/31	-70.94%	TRE	TRENCOR	1999/07/31	-68.18%	HWN	HOWDEN AFRICA	1998/02/28
-74.39%	FRO	FRONTRANGE SLTN.	2000/12/31	-70.91%	UCS	UCS GROUP	2000/02/29	-68.13%	SPS	SPESCOM	1999/05/31
-74.27%	TRT	TOURISM INV.	1999/07/31	-70.90%	BTG	BYTES TECH.GP.	2000/03/31	-68.11%	CUL	CULLINAN	1998/07/31
-74.26%	LAR	LA GROUP	2000/03/31	-70.86%	RNG	RANDGOLD & EXP.	2003/12/31	-68.03%	AMA	AMAL.APPC.	1998/02/28
-74.22%	BTG	BYTES TECH.GP.	1998/07/31	-70.79%	MOB	MOBILE INDUSTRIES	1996/07/31	-68.01%	SBL	SABLE	1998/04/30
-74.21%	STO	SETPOINT TECH.	2000/08/30	-70.76%	SPS	SPESCOM	2001/03/31	-68.00%	DAW	DS.& WHSG.NETWORK	1996/05/31
-74.21%	KAP	KAP INTL.	1996/12/31	-70.75%	PGR	PEREGRINE	1999/04/30	-68.00%	DAW	DS.& WHSG.NETWORK	1996/03/31
-74.10%	IVT	INVICTA	1997/11/30	-70.73%	AFL	AFLEASE GD.& UR.RES.	2003/09/30	-67.99%	APN	ASPEN PHMCR	1996/07/31
-74.02%	ENV	ENVIROSERV	1997/04/30	-70.69%	AFL	AFLEASE GD.& UR.RES.	2003/06/30	-67.97%	WNH	WINHOLD	1997/07/31
-74.01%	PMA	PRIMEDIA	1998/06/30	-70.65%	SCN	SCHARRIG MINING	1995/12/31	-67.95%	HWN	HOWDEN AFRICA	1997/09/30
-74.00%	BRC	BRANDCORP	1998/07/31	-70.64%	WNH	WINHOLD	1997/12/31	-67.94%	JCD	JCI	1999/09/30
-73.99%	BEL	BELL EQUIPMENT	1997/09/30	-70.60%	GDH	GOOD HOPE DIAMONDS	1995/02/28	-67.93%	JSC	JASCO ELTN.	1998/07/31
-73.93%	RNG	RANDGOLD & EXP.	1997/04/30	-70.60%	BEL	BELL EQUIPMENT	1997/10/31	-67.93%	ARI	AFN.RAINBOW MRLS.	1997/06/30
-73.88%	SOV	SOVEREIGN FOOD INVS.	1999/02/28	-70.57%	HDC	HUDACO	1997/10/31	-67.90%	SKJ	SEKUNJALO INVS.	1999/09/30
-73.83%	BTG	BYTES TECH.GP.	1999/01/31	-70.52%	CUL	CULLINAN	1996/01/31	-67.88%	TRE	TRENCOR	1999/05/31
-73.70%	JSC	JASCO ELTN.	1999/01/31	-70.43%	SGG	SAGE GROUP	2001/10/31	-67.83%	UCS	UCS GROUP	1999/11/30
-73.69%	IVT	INVICTA	1997/09/30	-70.40%	MST	MUSTEK	1999/08/31	-67.80%	ARI	AFN.RAINBOW MRLS.	1997/12/31
-73.68%	MTL	MERCANTILE BANK	2001/10/31	-70.40%	MUR	MURRAY & ROBERTS	1998/02/28	-67.67%	ECO	EDGARS CONS.STORES	1999/12/31
-73.57%	CUL	CULLINAN	1999/06/30	-70.38%	BJM	BARNARD JAC.MELLET	1999/11/30	-67.67%	IVT	INVICTA	1997/10/31
-73.54%	SPS	SPESCOM	1999/12/31	-70.38%	BJM	BARNARD JAC.MELLET	2000/04/30	-67.66%	MOB	MOBILE INDUSTRIES	1996/05/31
-73.53%	JSC	JASCO ELTN.	1999/08/31	-70.32%	MTL	MERCANTILE BANK	1999/08/31	-67.65%	KAP	KAP INTL.	1997/02/28
-73.53%	BPL	BARPLATS INVS.	2003/01/31	-70.32%	BRN	BRIMSTONE INV.'N'	1999/02/28	-67.65%	TPC	TRANSPACO	2000/10/31
-73.49%	IDI	IDION TECH.	2000/04/30	-70.22%	MTL	MERCANTILE BANK	1999/05/31	-67.64%	SBL	SABLE	1998/02/28
-73.44%	SKJ	SEKUNJALO INVS.	1999/10/31	-70.22%	MTL	MERCANTILE BANK	1999/07/31	-67.62½	RAH	REAL AFRICA	1998/09/30
-73.43½	DTC	DATATEC	2000/04/30	-70.13%	DRD	DRD GOLD	1997/02/28	-67.62%	DTC	DATATEC	2002/01/31
-73.36%	MTX	METOREX	1996/10/31	-70.13%	JSC	JASCO ELTN.	1998/12/31	-67.61%	MTX	METOREX	1996/11/30
-73.36%	LAN	LA GROUP 'N'	2000/04/30	-70.06%	SKJ	SEKUNJALO INVS.	2000/03/31	-67.60%	INM	INMINS	1997/08/31
-73.36%	DDT	DIMENSION DATA HDG.(JSE)	2001/12/31	-70.02%	DTC	DATATEC	2000/07/31	-67.59%	MOB	MOBILE INDUSTRIES	1999/04/30
-73.30%	PMN	PRIMEDIA 'N'	1998/07/31	-70.01%	EXL	EXCELLERATE HDG.	1998/06/30	-67.57%	JCD	JCI	1996/12/31
-73.28%	AFL	AFLEASE GD.& UR.RES.	2003/08/31	-70.00%	DAW	DS.& WHSG.NETWORK	1998/12/31	-67.50%	AVI	AVI	1997/08/31
-73.28%	KAP	KAP INTL.	1997/03/31	-70.00%	ERP	ERP.COM	1999/11/30	-67.49%	NPN	NASPERS	2000/10/31
-73.28%	CNL	CONTROL INSTRUMENTS GP.	1996/12/31	-70.00%	ERP	ERP.COM	1999/12/31	-67.45%	MBN	MOBILE INDUSTRIES 'N	1998/04/30
-73.24%	CUL	CULLINAN	1997/01/31	-69.98%	SKJ	SEKUNJALO INVS.	2000/04/30	-67.45%	DRD	DRD GOLD	1997/03/31
-73.24%	MMG	MICROMEGA HDG.	2001/08/30	-69.97%	JCD	JCI	1996/11/30	-67.34%	BTG	BYTES TECH.GP.	2000/02/29
-73.20%	GDH	GOOD HOPE DIAMONDS	1998/05/31	-69.94%	CLH	CITY LODGE HOTELS	1997/09/30	-67.28%	FRO	FRONTRANGE SLTN.	2001/01/31
-73.20%	BTG	BYTES TECH.GP.	1998/06/30	-69.89%	DDT	DIMENSION DATA HDG.(JSE)	2001/09/30	-67.26%	GIJ	GIJIMA AST GROUP	2002/09/30
-73.19%	BJM	BARNARD JAC.MELLET	2000/03/31	-69.85%	MOB	MOBILE INDUSTRIES	1998/05/31	-67.26%	DLV	DORBYL	1997/10/31
-73.12%	BEL	BELL EQUIPMENT	1997/05/31	-69.80%	CNC	CONCOR	1998/02/28	-67.25%	RBW	RAINBOW CHICKEN	1995/08/31
-73.11%	CUL	CULLINAN	1996/07/31	-69.75%	SOV	SOVEREIGN FOOD INVS.	1998/07/31	-67.24%	ARI	AFN.RAINBOW MRLS.	1997/02/28
-73.11%	CUL	CULLINAN	1999/03/31	-69.74%	ECO	EDGARS CONS.STORES	2000/03/31	-67.23%	BRN	BRIMSTONE INV.'N'	1999/01/31
-73.10%	DDT	DIMENSION DATA HDG.(JSE)	2002/02/28	-69.72%	SGG	SAGE GROUP	2002/06/30	-67.18%	RNG	RANDGOLD & EXP.	1997/07/31
-73.03%	KAP	KAP INTL.	1997/04/30	-69.71%	DCT	DATACENTRIX	1999/12/31	-67.17%	PAM	PALABORA MINING	1997/07/31
-73.00%	SKJ	SEKUNJALO INVS.	1999/06/30	-69.69%	BTG	BYTES TECH.GP.	2000/01/31	-67.16%	CNC	CONCOR	1997/07/31
-72.99%	MTX	METOREX	1996/12/31	-69.68%	IVT	INVICTA	1998/02/28	-67.12%	WBO	WILSON BAY HLM OVC	1997/11/30
-72.98%	HWN	HOWDEN AFRICA	1997/08/31	-69.67%	WNH	WINHOLD	1997/11/30	-67.12%	SGG	SAGE GROUP	2002/01/31
-72.90%	DLV	DORBYL	1997/09/30	-69.64%	RLO	REUNERT	1997/08/31	-67.12%	TRT	TOURISM INV.	1999/12/31
-72.86%	DDT	DIMENSION DATA HDG.(JSE)	2001/08/31	-69.63%	ADH	ADVTECH	1999/08/31	-67.03%	ART	ARGENT INDUSTRIAL	1997/06/30
-72.81%	GIJ	GIJIMA AST GROUP	2001/07/31	-69.58%	EXL	EXCELLERATE HDG.	1998/05/31	-67.02%	ART	ARGENT INDUSTRIAL	1997/10/31
-72.79%	BRN	BRIMSTONE INV.'N'	1998/09/30	-69.58%	SCN	SCHARRIG MINING	1998/01/31	-67.01%	TRT	TOURISM INV.	1999/08/31
-72.65%	IVT	INVICTA	1997/12/31	-69.56%	DAW	DS.& WHSG.NETWORK	1998/04/30	-67.00%	AVI	AVI	1997/09/30
-72.61%	LAN	LA GROUP 'N'	1999/05/31	-69.55%	SOV	SOVEREIGN FOOD INVS.	1998/04/30	-66.98%	MOB	MOBILE INDUSTRIES	1998/11/30
-72.58%	MST	MUSTEK	1999/07/31	-69.54%	CUL	CULLINAN	1996/08/31	-66.97%	ART	ARGENT INDUSTRIAL	1997/02/28
-72.55%	TRT	TOURISM INV.	1999/09/30	-69.37%	ENV	ENVIROSERV	1997/11/30	-66.93%	JSC	JASCO ELTN.	1998/10/31
-72.54%	SGG	SAGE GROUP	2001/12/31	-69.36%	JCD	JCI	1997/03/31	-66.92%	HAR	HARMONY GOLD MNG.	1996/11/30
-72.51%	MTL	MERCANTILE BANK	1999/10/31	-69.34%	BSB	THE HOUSE OF BUSBY	2000/02/29	-66.87%	SCN	SCHARRIG MINING	1998/02/28
-72.47%	JCD	JCI	1997/05/31	-69.34%	BRN	BRIMSTONE INV.'N'	1999/03/31	-66.85%	DTC	DATATEC	1999/12/31
-72.46%	SPS	SPESCOM	2001/06/30	-69.27%	HAR	HARMONY GOLD MNG.	1996/12/31	-66.77%	TRE	TRENCOR	1999/03/31
-72.45%	BRN	BRIMSTONE INV.'N'	1999/04/30	-69.27%	MTL	MERCANTILE BANK	1999/09/30	-66.76%	IVT	INVICTA	1998/03/31
-72.43%	CUL	CULLINAN	1998/10/31	-69.24%	MTL	MERCANTILE BANK	1999/06/30	-66.75%	AFI	AFRICAN LIFE ASR.	2000/01/31
-72.41%	LAR	LA GROUP	2000/04/30	-69.24%	SBL	SABLE	1997/11/30	-66.75%	DTC	DATATEC	2001/12/31
-72.40%	PAM	PALABORA MINING	1997/09/30	-69.23%	STO	SETPOINT TECH.	1998/11/30	-66.74%	CUL	CULLINAN	1998/08/31
-72.34%	PIM	PRISM	2000/11/30	-69.22%	TRE	TRENCOR	1999/04/30	-66.70%	GDH	GOOD HOPE DIAMONDS	1998/05/31
-72.32%	DRD	DRD GOLD	1996/09/30	-69.22%	TRT	TOURISM INV.	1999/05/31	-66.67%	PAM	PALABORA MINING	1997/10/31
-72.28%	GRF	GROUP FIVE	1997/09/30	-69.21%	NWL	NU WORLD	1998/05/31	-66.67%	EXL	EXCELLERATE HDG.	1998/07/31
-72.24%	ADH	ADVTECH	1999/06/30	-69.17%	IVT	INVICTA	1998/01/31	-66.66%	SPS	SPESCOM	1999/11/30
-72.23%	DAW	DS.& WHSG.NETWORK	1996/06/30	-69.16%	MTL	MERCANTILE BANK	1999/11/30	-66.66%	SPS	SPESCOM	2001/02/28
-72.20%	BJM	BARNARD JAC.MELLET	1999/12/31	-69.06%	APN	ASPEN PHMCR.	1996/03/31	-66.66%	STO	SETPOINT TECH.	1998/12/31
-72.18%	DDT	DIMENSION DATA HDG.(JSE)	2000/12/31	-69.03%	PCN	PARACON	2000/09/30	-66.65%	MTX	METOREX	1996/08/31
-72.14%	SPS	SPESCOM	2000/03/31	-69.03%	PIM	PRISM	2002/05/31	-66.64%	GDH	GOOD HOPE DIAMONDS	1995/08/31
-72.12%	FRO	FRONTRANGE SLTN.	1999/11/30	-68.97%	SOV	SOVEREIGN FOOD INVS.	1999/03/31	-66.63%	ENV	ENVIROSERV	1997/12/31
-72.10%	IVT	INVICTA	1997/08/31	-68.96%	CNC	CONCOR	1998/01/31	-66.63%	MUR	MURRAY & ROBERTS	1998/03/31
-72.09%	AFI	AFRICAN LIFE ASR.	1999/12/31	-68.96%	UCS	UCS GROUP	2000/03/31	-66.63%	WNH	WINHOLD	1998/01/31
-72.09%	CUL	CULLINAN	1998/09/30	-68.95%	MBN	MOBILE INDUSTRIES 'N'	1998/11/30	-66.53%	SPS	SPESCOM	2001/11/30
-72.05%	UCS	UCS GROUP	2000/01/31	-68.95%	UCS	UCS GROUP	1999/10/31	-66.52%	CUL	CULLINAN	1999/07/31
-72.00%	AFL	AFLEASE GD.& UR.RES.	2003/07/31	-68.88%	GDH	GOOD HOPE DIAMONDS	1998/07/31	-66.46%	ARI	AFN.RAINBOW MRLS.	1997/03/31
-71.95%	SPS	SPESCOM	2000/02/29	-68.88%	GDH	GOOD HOPE DIAMONDS	1998/08/31	-66.45%	NWL	NU WORLD	1998/08/30
-71.88%	SKJ	SEKUNJALO INVS.	2000/01/31	-68.84%	DAW	DS.& WHSG.NETWORK	1996/08/31	-66.42%	NPN	NASPERS	2000/03/31
-71.86%	ART	ARGENT INDUSTRIAL	1997/08/31	-68.83%	CNC	CONCOR	1999/06/30	-66.41%	GRF	GROUP FIVE	1998/01/31
-71.86%	EXL	EXCELLERATE HDG.	2002/06/30	-68.76%	WNH	WINHOLD	1997/10/31	-66.40%	LAR	LA GROUP	1999/08/31
-71.77%	DDT	DIMENSION DATA HDG.(JSE)	2002/01/31	-68.73%	MST	MUSTEK	1999/06/30	-66.39%	PMA	PRIMEDIA	1998/04/30

Appendix A.9. Sample Extreme Losers Sorted by Return

Continued.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
-66.37%	AFI	AFRICAN LIFE ASR.	1999/10/31	-63.64%	FRO	FRONTRANGE SLTN.	2001/03/31	-61.14%	PMA	PRIMEDIA	1998/02/28
-66.35%	WBO	WILSON BAY HLM OVC	1997/12/31	-63.62%	BEL	BELL EQUIPMENT	1997/02/28	-61.11%	EXL	EXCELLERATE HDG.	2002/10/31
-66.28%	AFI	AFRICAN LIFE ASR.	1999/11/30	-63.60%	KAP	KAP INTL.	1996/11/30	-61.09%	IVT	INVICTA	1998/04/30
-66.25%	SPS	SPESCOM	1999/10/31	-63.54%	CDZ	CADIZ	2000/03/31	-61.08%	SCN	SCHARRIG MINING	1996/03/31
-66.22%	SOV	SOVEREIGN FOOD INVS.	1999/04/30	-63.53%	LAN	LA GROUP 'N'	1999/08/31	-61.08%	DGC	DIGICORE	1999/04/30
-66.20%	MBN	MOBILE INDUSTRIES 'N'	1998/05/31	-63.53%	GRF	GROUP FIVE	1997/02/28	-61.07%	DST	DISTELL GROUP	1997/08/31
-66.19%	CDZ	CADIZ	1999/10/31	-63.52%	RBW	RAINBOW CHICKEN	1995/09/30	-61.07%	CUL	CULLINAN	1995/11/30
-66.19%	DTC	DATATEC	2002/05/31	-63.47%	CNL	CONTROL INSTRUMENTS GP.	1996/09/30	-61.07%	MBN	MOBILE INDUSTRIES 'N'	1999/05/31
-66.17%	MTX	METOREX	1996/06/30	-63.43%	SPS	SPESCOM	2001/12/31	-61.06%	CNL	CONTROL INSTRUMENTS GP.	1996/06/30
-66.12%	MOB	MOBILE INDUSTRIES	1998/04/30	-63.42%	CSB	CASHBUILD	2000/03/31	-61.06%	BRM	BEARING MAN	1997/12/31
-66.07%	CCT	CONNECTION GP.	1998/03/31	-63.37%	MTX	METOREX	1997/02/28	-61.04%	SBL	SABLE	1996/08/31
-66.02%	GIJ	GIJIMA AST GROUP	2001/06/30	-63.32%	TRE	TRENCOR	1998/02/28	-61.02%	MMG	MICROMEGA HDG.	2002/10/31
-65.99%	GRF	GROUP FIVE	1997/03/31	-63.27%	MOB	MOBILE INDUSTRIES	1996/06/30	-61.00%	ERP	ERP.COM	1999/09/30
-65.98%	PGR	PEREGRINE	1999/05/31	-63.27%	ART	ARGENT INDUSTRIAL	1997/07/31	-61.00%	WAR	WESTERN AREAS	1996/10/31
-65.96%	RNG	RANDGOLD & EXP.	2003/11/30	-63.27%	DST	DISTELL GROUP	1997/11/30	-61.00%	PGR	PEREGRINE	2000/02/29
-65.89%	SPS	SPESCOM	1999/07/31	-63.26%	JCD	JCI	1999/08/31	-60.98%	AFI	AFRICAN LIFE ASR.	1999/07/31
-65.87%	MOB	MOBILE INDUSTRIES	1998/06/30	-63.25%	CSB	CASHBUILD	1995/06/30	-60.94%	TRT	TOURISM INV.	2000/01/31
-65.83%	WNH	WINHOLD	1998/04/30	-63.16%	HDC	HUDACO	1997/12/31	-60.90%	WES	WESCO INVESTMENTS	1997/11/30
-65.81%	SCN	SCHARRIG MINING	1997/06/30	-63.16%	MTL	MERCANTILE BANK	1999/04/30	-60.88%	PGR	PEREGRINE	2000/07/31
-65.80%	PIM	PRISM	2002/02/28	-63.12%	WNH	WINHOLD	1998/05/31	-60.83%	PCN	PARACON	2000/10/31
-65.78%	SOV	SOVEREIGN FOOD INVS.	1999/08/31	-63.10%	EXL	EXCELLERATE HDG.	2002/07/31	-60.80%	SBL	SABLE	1998/06/30
-65.75%	MOB	MOBILE INDUSTRIES	1998/03/31	-62.98%	DRD	DRD GOLD	2002/04/30	-60.67%	MBN	MOBILE INDUSTRIES 'N'	1999/07/31
-65.74%	WAR	WESTERN AREAS	1997/08/31	-62.98%	SPS	SPESCOM	2001/10/31	-60.61%	MOB	MOBILE INDUSTRIES	1998/08/31
-65.73%	GDH	GOOD HOPE DIAMONDS	1998/06/30	-62.95%	JCD	JCI	1997/02/28	-60.60%	RAH	REAL AFRICA	1998/07/31
-65.72%	MOB	MOBILE INDUSTRIES	1996/08/31	-62.93%	CNL	CONTROL INSTRUMENTS GP.	1996/11/30	-60.59%	EOH	ENTER.OUTSC.	2000/09/30
-65.71%	PIM	PRISM	2000/09/30	-62.93%	SGG	SAGE GROUP	2002/02/28	-60.56%	CNC	CONCOR	1999/12/31
-65.71%	BRM	BEARING MAN	1997/06/30	-62.93%	ENV	ENVIROSERV	1998/01/31	-60.54%	AVI	AVI	1996/11/30
-65.68%	GRF	GROUP FIVE	1997/07/31	-62.91%	CNC	CONCOR	1999/07/31	-60.49%	CSB	CASHBUILD	2000/04/30
-65.67%	DGC	DIGICORE	1999/05/31	-62.89%	AFL	AFLEASE GD.& UR.RES.	2003/11/30	-60.46%	WBO	WILSON BAY HLM OVC	1997/09/30
-65.66%	HWN	HOWDEN AFRICA	1997/07/31	-62.83%	JSC	JASCO ELTN.	1998/09/30	-60.45%	CUL	CULLINAN	1998/06/30
-65.66%	CNC	CONCOR	1997/12/31	-62.83%	HDC	HUDACO	1998/02/28	-60.45%	SPS	SPESCOM	1999/08/31
-65.64%	JCD	JCI	2003/12/31	-62.83%	EOH	ENTER.OUTSC.	2000/08/31	-60.43%	CNC	CONCOR	1997/11/30
-65.64%	DCT	DATACENTRIX	2000/01/31	-62.82%	WNH	WINHOLD	1997/09/30	-60.43%	SPS	SPESCOM	2001/05/31
-65.61%	KWV	KWV BELEGGINGS BPK.	1997/09/30	-62.81%	SPS	SPESCOM	1999/09/30	-60.41%	CSB	CASHBUILD	1995/01/31
-65.60%	BTG	BYTES TECH.GP.	2000/04/30	-62.75%	ADH	ADVTECH	1998/05/31	-60.41%	BJM	BARNARD JAC.MELLET	2000/05/31
-65.58%	MRF	MERAFE RESOURCES	1998/05/31	-62.71%	WAR	WESTERN AREAS	1996/11/30	-60.34%	RBW	RAINBOW CHICKEN	1999/04/30
-65.55%	ECO	EDGARS CONS.STORES	1998/02/28	-62.69%	DLV	DORBYL	1997/11/30	-60.32%	APN	ASPEN PHMCR.	1996/05/31
-65.52%	DAW	DS.& WHSG.NETWORK	1996/02/29	-62.67%	JCD	JCI	1997/10/31	-60.32%	BRC	BRANDCORP	1998/11/30
-65.50%	CUL	CULLINAN	1998/05/31	-62.66%	TRE	TRENCOR	1998/05/31	-60.30%	TSX	TRANS HEX GROUP	1997/08/31
-65.48%	BTG	BYTES TECH.GP.	1999/12/31	-62.64%	INM	INMINS	1997/11/30	-60.29%	PMA	PRIMEDIA	1998/03/31
-65.47%	PGR	PEREGRINE	2000/01/31	-62.64%	JCD	JCI	1997/01/31	-60.28%	FBR	FAMOUS BRANDS	1997/08/31
-65.43%	ELH	ELLERINE	1997/08/31	-62.61%	RNG	RANDGOLD & EXP.	2003/08/31	-60.25%	DTC	DATATEC	2000/01/31
-65.38%	ECO	EDGARS CONS.STORES	1999/11/30	-62.60%	SKJ	SEKUNJALO INVS.	1999/12/31	-60.24%	TSX	TRANS HEX GROUP	1997/07/31
-65.37%	TRT	TOURISM INV.	1999/04/30	-62.59%	BRN	BRIMSTONE INV.'N'	2000/07/31	-60.22%	FOS	FOSCHINI	1999/12/31
-65.36%	DDT	DIMENSION DATA HDG.(JSE)	2001/10/31	-62.58%	IDI	IDION TECH.	2000/01/31	-60.21%	BEL	BELL EQUIPMENT	1997/11/30
-65.33%	BJM	BARNARD JAC.MELLET	1999/10/31	-62.57%	WBO	WILSON BAY HLM OVC	1998/01/31	-60.19%	DRD	DRD GOLD	2003/12/31
-65.25%	BSB	THE HOUSE OF BUSBY	2000/03/31	-62.54%	TRE	TRENCOR	1998/04/30	-60.15%	ART	ARGENT INDUSTRIAL	1997/05/31
-65.25%	CNL	CONTROL INSTRUMENTS GP.	1996/10/31	-62.53%	AFI	AFRICAN LIFE ASR.	2000/03/31	-60.14%	MTL	MERCANTILE BANK	1999/12/31
-65.22%	KAP	KAP INTL.	2003/01/31	-62.50%	CNC	CONCOR	1999/11/30	-60.13%	ENV	ENVIROSERV	1997/01/31
-65.15%	MTL	MERCANTILE BANK	2000/02/29	-62.50%	NPN	NASPERS	1997/09/30	-60.11%	MOB	MOBILE INDUSTRIES	1999/05/31
-65.13%	ECO	EDGARS CONS.STORES	2000/02/29	-62.49%	JSC	JASCO ELTN.	2000/05/31	-60.11%	AVI	AVI	1997/06/30
-65.10%	MOB	MOBILE INDUSTRIES	1996/09/30	-62.48%	FOS	FOSCHINI	2000/03/31	-60.07%	PMN	PRIMEDIA 'N'	1998/03/31
-65.04%	SGG	SAGE GROUP	2001/11/30	-62.47%	DGC	DIGICORE	1999/02/28	-60.05%	CLH	CITY LODGE HOTELS	1998/01/31
-65.02%	CNC	CONCOR	1997/08/31	-62.46%	TRE	TRENCOR	1998/11/30	-60.04%	SOV	SOVEREIGN FOOD INVS.	1998/08/30
-65.01%	BTG	BYTES TECH.GP.	1998/05/31	-62.42%	RBW	RAINBOW CHICKEN	1997/08/31	-60.04%	PMA	PRIMEDIA	1998/10/31
-65.00%	GDH	GOOD HOPE DIAMONDS	1995/06/30	-62.38%	TRE	TRENCOR	1998/03/31	-60.02%	DRD	DRD GOLD	2002/05/31
-64.99%	SBL	SABLE	1998/05/31	-62.37%	TIW	TIGER WHEELS	1999/10/31	-60.01%	AFI	AFRICAN LIFE ASR.	2000/02/29
-64.97%	DRD	DRD GOLD	1996/08/31	-62.30%	KAP	KAP INTL.	1997/12/31	-60.01%	DST	DISTELL GROUP	1997/12/31
-64.97%	GRF	GROUP FIVE	1997/11/30	-62.25%	MBN	MOBILE INDUSTRIES 'N'	1998/06/30	-60.00%	AFL	AFLEASE GD.& UR.RES.	1997/06/30
-64.95%	RBW	RAINBOW CHICKEN	1997/05/31	-62.25%	CSB	CASHBUILD	1999/12/31	-60.00%	TPC	TRANSPACO	2000/09/30
-64.93%	WBO	WILSON BAY HLM OVC	1998/02/28	-62.24%	MOB	MOBILE INDUSTRIES	1998/02/28	-60.00%	CSB	CASHBUILD	1995/05/31
-64.90%	SKJ	SEKUNJALO INVS.	1999/05/31	-62.24%	MTL	MERCANTILE BANK	2000/01/31	-60.00%	DAW	DS & WHSG.NETWORK	1995/12/31
-64.83%	PGR	PEREGRINE	2000/03/31	-62.24%	ARI	AFN.RAINBOW MRLS.	1997/11/30	-60.00%	EXL	EXCELLERATE HDG.	1998/08/31
-64.82%	WES	WESCO INVESTMENTS	1997/10/31	-62.23%	CDZ	CADIZ	2000/02/29	-60.00%	KAP	KAP INTL.	1998/02/28
-64.82%	KGM	KAGISO MEDIA	1998/06/30	-62.14%	NPN	NASPERS	2000/04/30	-60.00%	PIM	PRISM	2000/04/30
-64.77%	MOB	MOBILE INDUSTRIES	1998/04/30	-62.10%	PGR	PEREGRINE	1999/06/30	-59.99%	CUL	CULLINAN	1995/12/31
-64.67%	NPN	NASPERS	2000/02/29	-62.10%	MLA	MITTAL STEEL SA.	1997/06/30	-59.99%	GDH	GOOD HOPE DIAMONDS	1995/09/30
-64.61%	ADH	ADVTECH	1998/10/31	-62.08%	WES	WESCO INVESTMENTS	1997/12/31	-59.98%	RBW	RAINBOW CHICKEN	1995/10/31
-64.60%	ECO	EDGARS CONS.STORES	2000/04/30	-62.08%	SCN	SCHARRIG MINING	1995/11/30	-59.97%	DGC	DIGICORE	1999/06/30
-64.57%	MTL	MERCANTILE BANK	2001/04/30	-62.05%	WES	WESCO INVESTMENTS	1997/09/30	-59.96%	SBL	SABLE	1996/12/31
-64.54%	MTL	MERCANTILE BANK	2000/03/31	-62.04%	GRF	GROUP FIVE	1997/10/31	-59.96%	SBL	SABLE	1997/01/31
-64.54%	MVL	MVELAPHANDA RES.	2003/11/30	-62.04%	KWV	KWV BELEGGINGS BPK.	1997/11/30	-59.96%	HDC	HUDACO	1998/01/31
-64.51%	MST	MUSTEK	1999/09/30	-62.03%	CNL	CONTROL INSTRUMENTS GP.	1996/08/31	-59.95%	INM	INMINS	1997/07/31
-64.43%	PMN	PRIMEDIA 'N'	1998/04/30	-62.02%	SCN	SCHARRIG MINING	1998/05/31	-59.94%	DGC	DIGICORE	1999/12/31
-64.40%	WNH	WINHOLD	1998/02/28	-61.99%	INM	INMINS	1995/01/31	-59.88%	NTC	NETWORK HLTHCR.	1998/05/31
-64.39%	SBL	SABLE	1998/01/31	-61.95%	GND	GRINDROD	1996/04/30	-59.88%	PMN	PRIMEDIA 'N'	1998/02/28
-64.38%	MMG	MICROMEGA HDG.	2002/05/31	-61.95%	MST	MUSTEK	2000/05/31	-59.85%	SPS	SPESCOM	2002/01/31
-64.36%	RBW	RAINBOW CHICKEN	1997/09/30	-61.94%	CUL	CULLINAN	1998/11/30	-59.85%	JCD	JCI	1997/04/30
-64.30%	MST	MUSTEK	2000/04/30	-61.91%	ADH	ADVTECH	1998/12/31	-59.85%	PGR	PEREGRINE	1999/03/31
-64.30%	HDC	HUDACO	1997/11/30	-61.90%	ERP	ERP.COM	1999/10/31	-59.81%	DRD	DRD GOLD	1999/11/30
-64.14%	HDC	HUDACO	1997/07/31	-61.82%	APN	ASPEN PHMCR.	1996/08/31	-59.80%	GDH	GOOD HOPE DIAMONDS	1999/11/30
-64.12%	MTX	METOREX	1996/07/31	-61.73%	MOB	MOBILE INDUSTRIES	1999/07/31	-59.80%	GDH	GOOD HOPE DIAMONDS	1999/12/31
-64.11%	TRT	TOURISM INV.	1999/03/31	-61.71%	TRE	TRENCOR	1999/06/30	-59.80%	BPL	BARPLATS INVS.	2002/10/31
-64.10%	AVI	AVI	1997/07/31	-61.70%	DST	DISTELL GROUP	1997/10/31	-59.79%	MOB	MOBILE INDUSTRIES	1998/07/31
-64.09%	BRM	BEARING MAN	1997/08/31	-61.67%	KWV	KWV BELEGGINGS BPK.	1997/10/31	-59.74%	NWL	NU WORLD	1998/04/30
-64.09%	MUR	MURRAY & ROBERTS	1998/05/31	-61.64%	BRN	BRIMSTONE INV.'N'	1998/10/31	-59.64%	ART	ARGENT INDUSTRIAL	1997/01/31
-64.04%	MTL	MERCANTILE BANK	2001/07/31	-61.64%	CNC	CONCOR	1999/08/31	-59.59%	BJM	BARNARD JAC.MELLET	2000/01/31
-64.03%	TPC	TRANSPACO	2000/12/31	-61.54%	WNH	WINHOLD	1998/06/30	-59.55%	GND	GRINDROD	1996/05/31
-64.02%	CNC	CONCOR	1999/05/31	-61.54%	SCN	SCHARRIG MINING	1996/02/29	-59.45%	MCU	M CUBED HOLDINGS	2002/05/31
-63.97%	AFL	AFLEASE GD.& UR.RES.	2003/10/31	-61.54%	SKJ	SEKUNJALO INVS.	2000/05/31	-59.43%	MBN	MOBILE INDUSTRIES 'N'	1998/02/28
-63.93%	HWN	HOWDEN AFRICA	1998/03/31	-61.53%	FOS	FOSCHINI	2000/01/31	-59.39%	PAM	PALABORA MINING	1997/06/30
-63.93%	ELH	ELLERINE	1997/09/30	-61.52%	ECO	EDGARS CONS.STORES	1998/03/31	-59.39%	JCD	JCI	2003/10/31
-63.90%	CNC	CONCOR	1998/03/31	-61.45%	CPA	CORPCAPITAL	1996/09/30	-59.36%	DST	DISTELL GROUP	1997/07/31
-63.89%	ECO	EDGARS CONS.STORES	1998/04/30	-61.45%	MTL	MERCANTILE BANK	2001/11/30	-59.35%	SCN	SCHARRIG MINING	1997/07/31
-63.86%	GND	GRINDROD	1996/06/30	-61.35%	DCT	DATACENTRIX	2000/03/31	-59.34%	BJM	BARNARD JAC.MELLET	1999/07/31
-63.86%	ECO	EDGARS CONS.STORES	2000/01/31	-61.29%	MES	MESSINA	2003/12/31	-59.33%	OMN	OMNIA	2000/03/31
-63.83%	MBN	MOBILE INDUSTRIES 'N'	1999/04/30	-61.23%	RLO	REUNERT	1997/09/30	-59.33%	ART	ARGENT INDUSTRIAL	1997/03/31
-63.76%	BTG	BYTES TECH.GP.	1998/04/30	-61.17%	MMG	MICROMEGA HDG.	2001/05/31	-59.29%	PCN	PARACON	2000/08/31

Appendix A.9. Sample Extreme Losers Sorted by Return

Continued.

Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date	Total Return	Code	Company Name	Start Date
-59.28%	KGM	KAGISO MEDIA	1998/05/31	-57.33%	NPK	NAMPAK	1997/08/31	-55.35%	TPC	TRANSPACO	1997/11/30
-59.26%	ABL	AFRICAN BANK INVS.	1999/06/30	-57.31%	BAW	BARLOWORLD	1997/09/30	-55.35%	TPC	TRANSPACO	1998/02/28
-59.26%	BRN	BRIMSTONE INV.'N'	2000/10/31	-57.29%	ELH	ELLERINE	1997/10/31	-55.35%	DGC	DIGICORE	1999/07/31
-59.23%	MUR	MURRAY & ROBERTS	1997/08/31	-57.23%	GIJ	GIJIMA AST GROUP	2001/02/28	-55.35%	JCD	JCI	1998/01/31
-59.20%	SCN	SCHARRIG MINING	1995/08/31	-57.22%	TIW	TIGER WHEELS	1999/05/31	-55.33%	KWV	KWV BELEGGINGS BPK.	1997/06/30
-59.19%	RCH	RICHEMONT SECS. (JSE)	2002/03/31	-57.22%	HAR	HARMONY GOLD MNG.	1997/02/28	-55.29%	TIW	TIGER WHEELS	1999/06/30
-59.19%	SPS	SPESCOM	2000/04/30	-57.21%	SCN	SCHARRIG MINING	1997/10/31	-55.26%	CUL	CULLINAN	1997/08/31
-59.18%	APN	ASPEN PHMCR.	1996/09/30	-57.20%	DTC	DATATEC	1999/11/30	-55.24%	ART	ARGENT INDUSTRIAL	1998/04/30
-59.16%	GRF	GROUP FIVE	1997/12/31	-57.17%	PGR	PEREGRINE	1999/11/30	-55.21%	SOV	SOVEREIGN FOOD INVS.	1998/09/30
-59.11%	SNT	SANTAM	1997/09/30	-57.14%	KAP	KAP INTL.	2003/06/30	-55.21%	CNC	CONCOR	1997/09/30
-59.11%	TSX	TRANS HEX GROUP	1997/06/30	-57.13%	ADH	ADVTECH	1998/06/30	-55.21%	GND	GRINDROD	1997/03/31
-58.92%	PMA	PRIMEDIA	1998/11/30	-57.13%	SFN	SASFIN	1999/07/31	-55.18%	PMA	PRIMEDIA	1998/08/31
-58.92%	DDT	DIMENSION DATA HDG.(JSE)	2002/06/30	-57.10%	INM	INMINS	1995/03/31	-55.17%	KAP	KAP INTL.	1999/04/30
-58.90%	NWL	NU WORLD	1998/08/31	-57.05%	CDZ	CADIZ	2000/01/31	-55.17%	FRO	FRONTRANGE SLTN.	1999/10/31
-58.89%	ARI	AFN.RAINBOW MRLS.	1997/09/30	-57.05%	AMA	AMAL.APPC.	1997/11/30	-55.10%	DRD	DRD GOLD	2002/06/30
-58.87%	DST	DISTELL GROUP	1997/09/30	-57.05%	BRC	BRANDCORP	1998/10/31	-55.10%	ARI	AFN.RAINBOW MRLS.	1996/11/30
-58.87%	VLE	VALUE GROUP	2000/03/31	-57.01%	SCN	SCHARRIG MINING	1998/09/30	-55.05%	PGR	PEREGRINE	2000/04/30
-58.86%	CCT	CONNECTION GP.	1999/03/31	-56.99%	BEL	BELL EQUIPMENT	1997/01/31	-55.05%	MTN	MTN GROUP	2000/07/31
-58.84%	RBW	RAINBOW CHICKEN	1997/04/30	-56.96%	MCU	M CUBED HOLDINGS	2002/02/28	-55.02%	MVG	MVELAPHANDA GROUP	2000/03/31
-58.84%	GDH	GOOD HOPE DIAMONDS	1995/07/31	-56.95%	VLE	VALUE GROUP	2000/04/30	-55.00%	DCT	DATACENTRIX	2000/02/29
-58.83%	DTC	DATATEC	2000/11/30	-56.92%	STO	SETPOINT TECH.	1998/07/31	-54.99%	DRD	DRD GOLD	2002/09/30
-58.83%	AFX	AFRICAN OXYGEN	1997/08/31	-56.92%	JDG	JD GROUP	2001/02/28	-54.98%	BSB	THE HOUSE OF BUSBY	1998/06/30
-58.82%	BRN	BRIMSTONE INV.'N'	1998/11/30	-56.90%	IVT	INVICTA	1998/05/31	-54.97%	SGG	SAGE GROUP	1999/12/31
-58.78%	SFN	SASFIN	1999/06/30	-56.90%	KAP	KAP INTL.	2000/06/30	-54.95%	RLO	REUNERT	1997/06/30
-58.77%	MPC	MR PRICE GROUP	2000/03/31	-56.87%	MPC	MR PRICE GROUP	2000/02/29	-54.95%	ARI	AFN.RAINBOW MRLS.	1996/12/31
-58.71%	KWV	KWV BELEGGINGS BPK.	1997/08/31	-56.87%	FOS	FOSCHINI	2000/02/29	-54.95%	CSB	CASHBUILD	1999/11/30
-58.69%	DST	DISTELL GROUP	1998/02/28	-56.85%	PIM	PRISM	2000/07/31	-54.95%	JCD	JCI	2003/09/30
-58.67%	BPL	BARPLATS INVS.	2002/08/31	-56.82%	CNC	CONCOR	2000/02/29	-54.94%	PAM	PALABORA MINING	1997/05/31
-58.65%	TDH	TRADEHOLD	2000/11/30	-56.80%	SFN	SASFIN	1999/05/31	-54.94%	SGG	SAGE GROUP	2001/08/31
-58.61%	CSB	CASHBUILD	2000/01/31	-56.78%	MUR	MURRAY & ROBERTS	1996/02/29	-54.92%	PPC	PRETORIA POR.CMT.	1997/07/31
-58.58%	ELH	ELLERINE	1997/11/30	-56.75%	CCT	CONNECTION GP.	1998/02/28	-54.87%	MUR	MURRAY & ROBERTS	1998/01/31
-58.58%	MDC	MEDI CLINIC	1997/09/30	-56.73%	RNG	RANDGOLD & EXP.	1997/10/31	-54.82%	SOV	SOVEREIGN FOOD INVS.	1998/10/31
-58.58%	MTL	MERCANTILE BANK	1999/03/31	-56.70%	MDC	MEDI CLINIC	1997/08/31	-54.80%	GND	GRINDROD	1997/02/28
-58.58%	ADH	ADVTECH	1998/03/31	-56.70%	MUR	MURRAY & ROBERTS	1996/01/31	-54.79%	ELH	ELLERINE	1998/02/28
-58.54%	DDT	DIMENSION DATA HDG.(JSE)	2002/05/31	-56.67%	MLA	MITTAL STEEL SA.	1997/07/31	-54.79%	MPC	MR PRICE GROUP	1999/11/30
-58.54%	RNG	RANDGOLD & EXP.	2003/09/30	-56.65%	BAW	BARLOWORLD	1997/08/31	-54.73%	MVG	MVELAPHANDA GROUP	2000/08/31
-58.53%	DTC	DATATEC	2002/06/30	-56.64%	BRM	BEARING MAN	1997/04/30	-54.71%	EOH	ENTER.OUTSC.	2000/01/31
-58.53%	GIJ	GIJIMA AST GROUP	2001/03/31	-56.63%	AVI	AVI	1996/12/31	-54.69%	TRT	TOURISM INV	2000/02/29
-58.51%	CUL	CULLINAN	1997/04/30	-56.57%	DRD	DRD GOLD	1996/05/31	-54.69%	ADH	ADVTECH	1998/04/30
-58.49%	DST	DISTELL GROUP	1998/01/31	-56.55%	BRN	BRIMSTONE INV.'N'	2000/09/30	-54.66%	MES	MESSINA	2003/09/30
-58.45%	WAR	WESTERN AREAS	1996/12/31	-56.53%	BRC	BRANDCORP	1997/09/30	-54.64%	APK	ASTRAPAK	1998/01/31
-58.42%	RAH	REAL AFRICA	1998/10/31	-56.45%	HDC	HUDACO	1998/03/31	-54.60%	AVI	AVI	1997/03/31
-58.39%	BPL	BARPLATS INVS.	2002/06/30	-56.43%	PMN	PRIMEDIA 'N'	1998/10/31	-54.59%	DCT	DATACENTRIX	1999/05/31
-58.34%	ECO	EDGARS CONS.STORES	2000/05/31	-56.43%	PIM	PRISM	2000/08/31	-54.55%	KAP	KAP INTL.	1999/02/28
-58.33%	SOV	SOVEREIGN FOOD INVS.	1998/12/31	-56.37%	RMH	RMB	1998/02/28	-54.55%	KAP	KAP INTL.	2003/10/31
-58.30%	VLE	VALUE GROUP	2000/09/30	-56.30%	ABL	AFRICAN BANK INVS.	1999/11/30	-54.54%	OMN	OMNIA	2000/02/29
-58.27%	AFL	AFLEASE GD.& UR.RES.	2003/01/31	-56.26%	TSX	TRANS HEX GROUP	1997/03/31	-54.54%	SNT	SANTAM	1997/08/31
-58.25%	CSB	CASHBUILD	1998/03/31	-56.25%	TPC	TRANSPACO	2000/08/31	-54.53%	CRG	CARGO CARRIERS	1998/07/31
-58.24%	DLV	DORBYL	1997/07/31	-56.19%	CKS	CROOKES BROTHERS	1997/09/30	-54.52%	MUR	MURRAY & ROBERTS	1997/12/31
-58.24%	NPN	NASPERS	2001/02/28	-56.16%	CNC	CONCOR	1999/10/31	-54.46%	TRE	TRENCOR	1998/06/30
-58.22%	ELH	ELLERINE	1998/01/31	-56.15%	JCD	JCI	2003/11/30	-54.44%	JSC	JASCO ELTN.	2000/08/31
-58.21%	SPS	SPESCOM	1999/03/31	-56.12%	RBW	RAINBOW CHICKEN	1997/06/30	-54.36%	GND	GRINDROD	1997/01/31
-58.19%	ELH	ELLERINE	1997/12/31	-56.11%	MCU	M CUBED HOLDINGS	2002/04/30	-54.32%	ECO	EDGARS CONS.STORES	1997/06/30
-58.18%	CKS	CROOKES BROTHERS	1997/10/31	-56.11%	BRM	BEARING MAN	1998/01/31	-54.32%	TRE	TRENCOR	1999/09/30
-58.16%	CDZ	CADIZ	1999/11/30	-56.07%	BRM	BEARING MAN	1998/03/31	-54.31%	BCX	BUSINESS CONNEXION GROUP	2001/12/31
-58.14%	MUR	MURRAY & ROBERTS	1995/12/31	-56.06%	DRD	DRD GOLD	1997/01/31	-54.31%	PPC	PRETORIA POR.CMT.	1997/08/31
-58.12%	CNL	CONTROL INSTRUMENTS GP.	1996/07/31	-56.02%	BRM	BEARING MAN	1997/05/31	-54.26%	KAP	KAP INTL.	2000/08/31
-58.12%	ART	ARGENT INDUSTRIAL	1995/12/31	-55.97%	ARI	AFN.RAINBOW MRLS.	1997/01/31	-54.26%	GRF	GROUP FIVE	1997/04/30
-58.11%	BSB	THE HOUSE OF BUSBY	2000/01/31	-55.95%	SBL	SABLE	1997/02/28	-54.26%	RLO	REUNERT	1997/07/31
-58.06%	MES	MESSINA	2003/11/30	-55.92%	MLA	MITTAL STEEL SA.	1996/12/31	-54.26%	ART	ARGENT INDUSTRIAL	1995/05/31
-58.06%	KAP	KAP INTL.	2001/07/31	-55.89%	BRN	BRIMSTONE INV.'N'	1998/12/31	-54.26%	BCF	BOWLER METCALF	1998/09/30
-58.06%	KAP	KAP INTL.	2001/11/30	-55.89%	ADH	ADVTECH	1998/11/30	-54.22%	RCH	RICHEMONT SECS. (JSE)	2002/04/30
-58.04%	BEL	BELL EQUIPMENT	1997/04/30	-55.87%	RBW	RAINBOW CHICKEN	1997/10/31	-54.21%	PGR	PEREGRINE	1998/10/31
-58.03%	BRC	BRANDCORP	1998/03/31	-55.86%	ADR	ADCORP	2001/08/31	-54.17%	CMH	COMBINED MOTOR	1996/03/31
-58.02%	WNH	WINHOLD	1997/08/30	-55.83%	FOS	FOSCHINI	1997/08/31	-54.14%	WAR	WESTERN AREAS	1996/06/30
-57.98%	GIJ	GIJIMA AST GROUP	2001/04/30	-55.82%	SCN	SCHARRIG MINING	1998/04/30	-54.12%	NPN	NASPERS	2000/07/31
-57.98%	MCU	M CUBED HOLDINGS	2002/01/31	-55.82%	RNG	RANDGOLD & EXP.	2003/07/31	-54.11%	IVT	INVICTA	1997/07/31
-57.96%	NPN	NASPERS	2000/08/31	-55.82%	AFE	AECI	1997/09/30	-54.11%	SOL	SASOL	1997/12/31
-57.92%	SOV	SOVEREIGN FOOD INVS.	1999/07/31	-55.82%	RAH	REAL AFRICA	1998/11/30	-54.08%	MTN	MTN GROUP	2000/09/30
-57.88%	TIW	TIGER WHEELS	1999/12/31	-55.81%	TRE	TRENCOR	1998/12/31	-54.07%	KWV	KWV BELEGGINGS BPK.	1998/02/28
-57.87%	ABL	AFRICAN BANK INVS.	1999/12/31	-55.78%	VLE	VALUE GROUP	2000/02/29	-54.05%	LON	LONMIN (JSE)	2002/03/31
-57.87%	APN	ASPEN PHMCR.	1996/06/30	-55.77%	MBN	MOBILE INDUSTRIES 'N'	1998/08/31	-54.03%	MOB	MOBILE INDUSTRIES	1998/10/31
-57.84%	ADH	ADVTECH	1998/07/31	-55.77%	MPC	MR PRICE GROUP	1996/02/29	-54.03%	AFI	AFRICAN LIFE ASR.	2000/05/31
-57.83%	NPN	NASPERS	2001/01/31	-55.77%	DRD	DRD GOLD	1996/06/30	-54.00%	SCN	SCHARRIG MINING	1998/07/31
-57.81%	RNG	RANDGOLD & EXP.	1998/01/31	-55.74%	MBN	MOBILE INDUSTRIES 'N'	1999/03/31	-54.00%	TNT	TONGAAT HLT.GP.	1997/09/30
-57.81%	MES	MESSINA	2003/10/31	-55.72%	DLV	DORBYL	1997/12/31	-53.99%	DGC	DIGICORE	1999/08/31
-57.76%	BJM	BARNARD JAC.MELLET	1999/08/31	-55.71%	CDZ	CADIZ	1999/05/31	-53.97%	RNG	RANDGOLD & EXP.	2003/10/31
-57.73%	DCT	DATACENTRIX	1999/11/30	-55.64%	BJM	BARNARD JAC.MELLET	1999/06/30	-53.96%	RNG	RANDGOLD & EXP.	1997/12/31
-57.72%	JNC	JOHNNIC	1997/09/30	-55.64%	BSB	THE HOUSE OF BUSBY	1998/05/31	-53.95%	BTG	BYTES TECH.GP.	1998/09/30
-57.70%	ARI	AFN.RAINBOW MRLS.	1997/05/31	-55.63%	JSC	JASCO ELTN.	1999/09/30	-53.95%	AVI	AVI	1997/01/31
-57.69%	SGG	SAGE GROUP	2001/09/30	-55.62%	SOV	SOVEREIGN FOOD INVS.	1998/08/31	-53.93%	MTL	MERCANTILE BANK	2001/03/31
-57.65%	AMA	AMAL.APPC.	1998/01/31	-55.56%	BRC	BRANDCORP	1998/02/28	-53.92%	DAW	DS & WHSG.NETWORK	1996/01/31
-57.64%	MUR	MURRAY & ROBERTS	1998/04/30	-55.56%	BRC	BRANDCORP	1998/08/31	-53.91%	SCN	SCHARRIG MINING	1997/03/31
-57.63%	HAR	HARMONY GOLD MNG.	1997/01/31	-55.56%	AFL	AFLEASE GD.& UR.RES.	1999/10/31	-53.86%	HAR	HARMONY GOLD MNG.	1996/10/31
-57.62%	BTG	BYTES TECH.GP.	1999/11/30	-55.56%	KAP	KAP INTL.	1999/12/31	-53.86%	ABL	AFRICAN BANK INVS.	1998/10/31
-57.57%	CMH	COMBINED MOTOR	1996/01/31	-55.56%	MTL	MERCANTILE BANK	1999/02/28	-53.85%	TPC	TRANSPACO	2000/11/30
-57.56%	MMG	M'CROMEGA HDG.	2001/12/31	-55.52%	INM	INMINS	1995/02/28	-53.81%	CNL	CONTROL INSTRUMENTS GP.	1998/07/31
-57.55%	ABL	AFRICAN BANK INVS.	1999/07/31	-55.51%	SOL	SASOL	1997/08/31	-53.80%	SAP	SAPPI	1997/08/31
-57.53%	MOB	MOBILE INDUSTRIES	1999/03/31	-55.50%	GDH	GOOD HOPE DIAMONDS	1998/03/31	-53.78%	ECO	EDGARS CONS.STORES	2003/06/30
-57.52%	SFN	SASFIN	1998/05/31	-55.47%	BCX	BUSINESS CONNEXION GROUP	2001/09/30	-53.77%	HCI	HOSKEN CONS.INV.	2000/07/31
-57.50%	SPS	SPESCOM	2001/04/30	-55.47%	JCD	JCI	1999/04/30	-53.77%	PGR	PEREGRINE	1999/12/31
-57.50%	CNC	CONCOR	2000/03/31	-55.44%	MDC	MEDI CLINIC	1998/05/31	-53.72%	RAH	REAL AFRICA	1999/03/31
-57.48%	JDG	JD GROUP	2001/08/31	-55.43%	GDH	GOOD HOPE DIAMONDS	1999/10/31	-53.71%	NPN	NASPERS	2001/03/31
-57.45%	TSX	TRANS HEX GROUP	1997/09/30	-55.42%	TDH	TRADEHOLD	2001/01/31	-53.69%	RBW	RAINBOW CHICKEN	1995/12/31
-57.44%	AMS	ANGLO AMERICAN PLAT.	2002/04/30	-55.42%	MLA	MITTAL STEEL SA.	1997/08/31	-53.69%	JCD	JCI	1998/02/28
-57.39%	MBN	MOBILE INDUSTRIES 'N'	1998/07/31	-55.42%	DTC	DATATEC	2001/01/31	-53.67%	SCN	SCHARRIG MINING	1995/07/31
-57.36%	SOL	SASOL	1997/09/30	-55.42%	JDG	JD GROUP	2001/03/31	-53.65%	GIJ	GIJIMA AST GROUP	2001/05/31
-57.35%	NHM	NORTHAM PLATINUM	1996/05/31	-55.40%	GRF	GROUP FIVE	1997/06/30	-53.64%	GDF	GOLD REEF CNO.RSTS.	1999/03/31

Appendix A.9. Sample Extreme Losers Sorted by Return

Continued.

Total Return	Code	Company Name	Start Date
-53.62%	GND	GRINDROD	1996/11/30
-53.60%	APK	ASTRAPAK	1998/02/28
-53.59%	AVI	AVI	1997/10/31
-53.58%	DLV	DORBYL	1997/01/31
-53.57%	DGC	DIGICORE	1999/01/31
-53.57%	PMN	PRIMEDIA 'N'	1998/08/31
-53.56%	HCI	HOSKEN CONS INV	2001/01/31
-53.54%	STO	SETPOINT TECH.	2000/07/31
-53.53%	FOS	FOSCHINI	2000/04/30
-53.52%	SRN	SEARDEL INV	1998/04/30
-53.51%	JSC	JASCO ELTN	2000/09/30
-53.50%	DCT	DATACENTRIX	1999/10/31
-53.46%	RBW	RAINBOW CHICKEN	1995/11/30
-53.46%	TIW	TIGER WHEELS	1999/09/30
-53.45%	HDC	HUDACO	1997/06/30
-53.43%	MCU	M CUBED HOLDINGS	2001/12/31
-53.42%	DTC	DATATEC	2000/06/30
-53.42%	ARI	AFN RAINBOW MRLS.	1998/01/31
-53.41%	ART	ARGENT INDUSTRIAL	1995/11/30
-53.35%	PGR	PEREGRINE	2000/08/31
-53.34%	TIW	TIGER WHEELS	2000/03/31
-53.34%	AMA	AMAL APPC	1999/12/31
-53.33%	DTC	DATATEC	2001/08/31
-53.33%	KGM	KAGISO MEDIA	1998/07/31
-53.33%	DST	DISTELL GROUP	1997/06/30
-53.30%	MST	MUSTEK	1999/03/31
-53.28%	SBL	SABLE	1996/11/30
-53.25%	SOV	SOVEREIGN FOOD INVS.	1999/11/30
-53.19%	PCN	PARACON	2000/11/30
-53.19%	RBW	RAINBOW CHICKEN	1999/02/28
-53.18%	LON	LONMIN (JSE)	2002/04/30
-53.14%	NPN	NASPERS	1997/10/31
-53.13%	BSB	THE HOUSE OF BUSBY	2000/04/30
-53.11%	TIW	TIGER WHEELS	1999/04/30
-53.11%	CMH	COMBINED MOTOR	1995/12/31
-53.08%	PCN	PARACON	2000/12/31
-53.05%	AFI	AFRICAN LIFE ASR.	1999/06/30
-53.03%	PGR	PEREGRINE	2000/05/31
-53.03%	ADR	ADCORP	1999/11/30
-53.02%	RBW	RAINBOW CHICKEN	1997/07/31
-52.99%	BSB	THE HOUSE OF BUSBY	2000/08/31
-52.96%	APN	ASPEN PHMCR	1995/12/31
-52.94%	BPL	BARPLATS INVS.	1997/02/28
-52.93%	WAR	WESTERN AREAS	1996/05/31
-52.92%	JDG	JD GROUP	2001/09/30
-52.91%	SCN	SCHARRIG MINING	1997/11/30
-52.91%	PMA	PRIMEDIA	1998/09/30
-52.90%	PGR	PEREGRINE	1998/12/31
-52.89%	CLH	CITY LODGE HOTELS	1997/10/31
-52.84%	DGC	DIGICORE	1999/03/31
-52.82%	NPK	NAMPAK	1997/09/30
-52.80%	CDZ	CADIZ	1999/06/30
-52.77%	MVL	MVELAPHANDA RES	1997/02/28
-52.76%	KAP	KAP INTL	1996/10/31
-52.74%	INM	INMINS	1997/10/31
-52.69%	ECO	EDGARS CONS.STORES	1999/10/31
-52.66%	MLA	MITTAL STEEL SA.	1997/09/30
-52.65%	MVG	MVELAPHANDA GROUP	2000/09/30
-52.64%	TRE	TRENCOR	1999/02/28
-52.63%	SCN	SCHARRIG MINING	1997/12/31
-52.61%	JDG	JD GROUP	2001/06/30
-52.61%	UCS	UCS GROUP	2000/08/31
-52.58%	SOV	SOVEREIGN FOOD INVS.	1998/01/31
-52.56%	WAR	WESTERN AREAS	1997/02/28
-52.55%	DTC	DATATEC	2000/05/31
-52.55%	BJM	BARNARD JAC MELLET	1999/09/30
-52.53%	BCF	BOWLER METCALF	1998/07/31
-52.47%	PMN	PRIMEDIA 'N'	2000/03/31
-52.47%	HAR	HARMONY GOLD MNG.	2003/12/31
-52.46%	BPL	BARPLATS INVS.	2002/07/31
-52.43%	CDZ	CADIZ	2000/04/30
-52.41%	SOL	SASOL	1997/11/30
-52.39%	KAP	KAP INTL	1995/10/31
-52.38%	DCT	DATACENTRIX	1999/06/30
-52.36%	BSB	THE HOUSE OF BUSBY	2000/06/30
-52.27%	LGL	LIBERTY GROUP	1998/03/31
-52.27%	DGC	DIGICORE	2001/08/31
-52.25%	ELH	ELLERINE	1998/04/30
-52.23%	RBW	RAINBOW CHICKEN	1999/03/31
-52.22%	CPA	CORPCAPITAL	1999/08/31
-52.21%	WBO	WILSON BAY HLM OVC	1998/05/31
-52.20%	MTX	METOREX	1997/01/31
-52.15%	EXL	EXCELLERATE HDG	2002/09/30
-52.13%	AFE	AECI	1997/11/30
-52.11%	TIW	TIGER WHEELS	1999/11/30
-52.09%	AFL	AFLEASE GD.& UR.RES	1999/11/30
-52.09%	HAR	HARMONY GOLD MNG.	1997/03/31
-52.04%	DRD	DRD GOLD	2002/08/31
-52.01%	PMN	PRIMEDIA 'N'	1998/11/30
-52.00%	NWL	NU WORLD	1998/10/31
-52.00%	ILA	ILIAD AFRICA	1998/07/31
-52.00%	PCN	PARACON	2000/07/31
-52.00%	PCN	PARACON	2001/02/28
-51.99%	TSX	TRANS HEX GROUP	1997/05/31
-51.92%	BPL	BARPLATS INVS.	1996/01/31
-51.92%	WNH	WINHOLD	1998/07/31
-51.91%	MMG	MICROMEGA HDG.	2000/02/29
-51.89%	RAH	REAL AFRICA	1999/08/31
-51.88%	CKS	CROOKES BROTHERS	1997/11/30
-51.88%	CDZ	CADIZ	1999/04/30
-51.87%	FOS	FOSCHINI	1997/12/31
-51.86%	ADR	ADCORP	2001/09/30
-51.84%	HCI	HOSKEN CONS INV.	2000/09/30
-51.80%	BCX	BUSINESS CONNEXION GROUP	2001/10/31
-51.80%	NHM	NORTHAM PLATINUM	1996/07/31
-51.79%	ADR	ADCORP	2000/03/31
-51.78%	AFI	AFRICAN LIFE ASR	1999/08/31
-51.78%	JCD	JCI	1999/12/31
-51.77%	CPA	CORPCAPITAL	1999/07/31
-51.77%	JNC	JOHNNIC	2000/07/31
-51.75%	RBW	RAINBOW CHICKEN	1996/05/31
-51.75%	SGG	SAGE GROUP	2001/07/31
-51.74%	UCS	UCS GROUP	1999/05/31
-51.74%	KAP	KAP INTL	1996/07/31
-51.72%	PCN	PARACON	2000/03/31
-51.71%	MST	MUSTEK	1999/05/31
-51.70%	BRM	BEARING MAN	1997/11/30
-51.69%	COM	COMAIR	2001/06/30
-51.68%	NPN	NASPERS	1997/08/31
-51.67%	KAP	KAP INTL	1998/04/30
-51.67%	ATN	ALLIED ELECTRONICS	1996/01/31
-51.64%	GND	GRINDROD	1996/12/31
-51.63%	BPL	BARPLATS INVS	2002/05/31
-51.61%	MES	MESSINA	2002/06/30
-51.56%	ART	ARGENT INDUSTRIAL	1995/08/31
-51.53%	MMG	MICROMEGA HDG	2001/11/30
-51.52%	JSC	JASCO ELTN.	2000/07/31
-51.52%	EOH	ENTER OUTSC.	1999/06/30
-51.52%	PPC	PRETORIA POR CMT.	1997/09/30
-51.52%	KAP	KAP INTL	2000/03/31
-51.52%	NHM	NORTHAM PLATINUM	1996/06/30
-51.51%	TPC	TRANSPACO	1998/01/31
-51.49%	SCN	SCHARRIG MINING	1998/11/30
-51.47%	APN	ASPEN PHMCR	1997/01/31
-51.44%	WAR	WESTERN AREAS	1996/07/31
-51.44%	AFE	AECI	1998/05/31
-51.42%	STO	SETPOINT TECH	1998/08/31
-51.41%	COM	COMAIR	2001/03/31
-51.39%	CLH	CITY LODGE HOTELS	1997/02/28
-51.37%	SBL	SABLE	1998/07/31
-51.34%	NTC	NETWORK HLTHCR.	1997/09/30
-51.34%	FOS	FOSCHINI	1997/09/30
-51.33%	BSB	THE HOUSE OF BUSBY	2000/12/31
-51.32%	VLE	VALUE GROUP	1999/09/30
-51.30%	VLE	VALUE GROUP	2001/03/31
-51.30%	NTC	NETWORK HLTHCR.	1998/02/28
-51.28%	SPG	SUPER GROUP	1998/07/31
-51.28%	CSB	CASHBUILD	2000/02/29
-51.25%	MTN	MTN GROUP	2000/08/31
-51.24%	PGR	PEREGRINE	2000/06/30
-51.24%	DAW	DS & WHSG NETWORK	1995/11/30
-51.23%	CSB	CASHBUILD	1998/02/28
-51.17%	WBO	WILSON BAY HLM OVC	1997/10/31
-51.14%	TPC	TRANSPACO	1998/06/30
-51.13%	COM	COMAIR	2001/07/31
-51.13%	PGR	PEREGRINE	1999/02/28
-51.13%	RBW	RAINBOW CHICKEN	1995/01/31
-51.11%	HAR	HARMONY GOLD MNG.	1996/07/31
-51.10%	CNL	CONTROL INSTRUMENTS GP	1996/05/31
-51.09%	OMN	OMNIA	1997/08/31
-51.05%	GIJ	GIJIMA AST GROUP	2003/10/31
-51.04%	JDG	JD GROUP	2001/05/31
-50.99%	ILA	ILIAD AFRICA	1998/06/30
-50.96%	CMH	COMBINED MOTOR	1996/02/29
-50.95%	SCN	SCHARRIG MINING	1997/05/31
-50.94%	CUL	CULLINAN	1995/10/31
-50.92%	CNL	CONTROL INSTRUMENTS GP	2000/12/31
-50.86%	MCU	M CUBED HOLDINGS	2002/03/31
-50.85%	RAH	REAL AFRICA	1998/05/31
-50.83%	AMA	AMAL APPC.	1997/09/30
-50.83%	ALT	ALLIED TECHNOLOGIES	1995/12/31
-50.80%	AFI	AFRICAN LIFE ASR.	2000/04/30
-50.79%	MLA	MITTAL STEEL SA.	1997/02/28
-50.77%	HWN	HOWDEN AFRICA	1997/06/30
-50.77%	PAM	PALABORA MINING	1997/02/28
-50.77%	CNC	CONCOR	2000/04/30
-50.73%	MCU	M CUBED HOLDINGS	2001/09/30
-50.71%	ABL	AFRICAN BANK INVS	2000/01/31
-50.71%	SCN	SCHARRIG MINING	1995/04/30
-50.65%	FOS	FOSCHINI	1999/11/30
-50.62%	NPN	NASPERS	2000/05/31
-50.59%	SPS	SPESCOM	2002/04/30
-50.59%	AFL	AFLEASE GD & UR.RES	2003/03/31
-50.55%	NWL	NU WORLD	1998/07/31
-50.55%	STO	SETPOINT TECH.	1998/10/31
-50.53%	RAH	REAL AFRICA	2000/01/31
-50.49%	JCD	JCI	1996/10/31
-50.41%	AMS	ANGLO AMERICAN PLAT.	2002/03/31
-50.41%	JDG	JD GROUP	2001/07/31
-50.41%	OMN	OMNIA	2000/04/30
-50.41%	GDH	GOOD HOPE DIAMONDS	2000/01/31
-50.40%	CDZ	CADIZ	1999/09/30
-50.39%	JNC	JOHNNIC	2000/09/30
-50.38%	SCN	SCHARRIG MINING	1995/10/31
-50.38%	EOH	ENTER OUTSC.	2000/02/29
-50.38%	SFN	SASFIN	1998/06/30
-50.36%	SGG	SAGE GROUP	2002/07/31
-50.34%	CNL	CONTROL INSTRUMENTS GP	2000/03/31
-50.30%	FOS	FOSCHINI	1996/01/31
-50.29%	OMN	OMNIA	1998/03/31
-50.29%	SGG	SAGE GROUP	2001/02/28
-50.25%	GIJ	GIJIMA AST GROUP	2002/11/30
-50.23%	MOB	MOBILE INDUSTRIES	1996/03/31
-50.22%	SOL	SASOL	1997/10/31
-50.21%	MLA	MITTAL STEEL SA.	1999/11/30
-50.19%	WNH	WINHOLD	1998/11/30
-50.18%	SAP	SAPPI	1997/01/31
-50.18%	TPC	TRANSPACO	1998/05/31
-50.17%	ALT	ALLIED TECHNOLOGIES	1996/01/31
-50.15%	INM	INMINS	1998/03/31
-50.15%	SKJ	SEKUNJALO INVS	2000/02/29
-50.12%	WES	WESCO INVESTMENTS	1998/02/28
-50.12%	EXL	EXCELLERATE HDG.	2002/01/31
-50.12%	EXL	EXCELLERATE HDG.	2002/05/31
-50.10%	SOV	SOVEREIGN FOOD INVS.	1998/05/31
-50.09%	MOB	MOBILE INDUSTRIES	1996/02/29
-50.07%	BTG	BYTES TECH GP.	1998/08/31
-50.07%	MOB	MOBILE INDUSTRIES	1998/12/31
-50.02%	GDH	GOOD HOPE DIAMONDS	1995/05/31
-50.01%	CNL	CONTROL INSTRUMENTS GP.	2000/09/30
-50.00%	SPS	SPESCOM	1998/07/31
-50.00%	AFL	AFLEASE GD & UR RES.	1995/01/31
-50.00%	ART	ARGENT INDUSTRIAL	1997/12/31
-50.00%	APN	ASPEN PHMCR.	1996/10/31
-50.00%	DCT	DATACENTRIX	1999/04/30
-50.00%	DCT	DATACENTRIX	1999/09/30
-50.00%	DTC	DATATEC	1999/04/30
-50.00%	ERP	ERP.COM	2000/10/31
-50.00%	EXL	EXCELLERATE HDG	2002/04/30
-50.00%	IDI	IDION TECH	1999/12/31
-50.00%	JCD	JCI	1999/11/30
-50.00%	KAP	KAP INTL	1998/03/31
-50.00%	KAP	KAP INTL	1999/03/31
-50.00%	KAP	KAP INTL	2002/12/31
-50.00%	KAP	KAP INTL	2003/05/31
-50.00%	MLA	MITTAL STEEL SA.	1997/03/31
-50.00%	PCN	PARACON	2000/06/30
-50.00%	SCN	SCHARRIG MINING	1998/10/31
-50.00%	STO	SETPOINT TECH.	2000/08/31
-50.00%	TPC	TRANSPACO	1998/07/31

Appendix A.10. Extreme Performance and Other Signals Identified in Past Literature

The table shows possible signals and factors that may affect share performance as identified in past literature. For each paper, the variables which have been identified as relevant in explaining returns are listed. In addition, if the author derives a filter level for screening out an extreme performing share or provides a reason for the inclusion of the variable in their models, this is also included. Finally, the category of each variable as defined by the relevant author is provided.

Category	Variable	Screen / Reason	Paper
C	Quarterly Earnings	Increase > 18 - 20% Increased for last 5 to 7 quarters	O'Neil (2002)
	Percentage increase in quarterly earnings	> 0	
A	Annual EPS	Increase > 25% pa over last 3 years	
	Annual pretax profit margin	Increasing	
	Annual Return on Equity	Increasing, currently > 17%	
N	Daily Trading Volume	50% higher than daily average	
	Price	>= 90% of 52-week high >= 80% of 5 year high	
	Current price compared to buy price	CP > BP by 2-3% - buy more CP > BP by 5% - stop buying CP < BP by 7% - sell	
S	Shares Outstanding	<= 25 million	
	Daily Volume traded	Increasing	
	Share buy-backs / Management Ownership	Yes	
L	growth, pre-tax and after-tax profit margin, ROE and product quality)	Top 2 or 3	
	Relative strength ratio	> 70	
	Annual earnings growth (industry rating)	1	
	Sales growth (industry rating)	1	
	Pretax profit margin (industry rating)	1	
	After-tax profit margin (industry rating)	1	
	ROE (industry rating)	1	
	Product quality (industry rating)	1	
I	Institutional owners	>= 25	
	Institutional ownership	increased over last several quarters >= 5% <= 35%	
M	Market condition	avoid weak market	
	Market index weak if	< 200 day moving average	
"smart money"	Institutional Owners		Reinganum (1988)
	Institutional Ownership		
	Insider Trading		
Valuation measures	P/E	Not NB	Reinganum (1988)
	Size	Not NB (Reinganum), NB (Glickman et al)	
	Beta	Not NB	
	Price-to-book ratio	< 1	
	Diluted EPS		Glickman et al (2001)
Technical Indicators	Relative strength (weighted)	>= 70	Reinganum (1988)
	Change in relative strength	Large increase from previous quarter	
	Historical daily volatility over past 3 months		Glickman et al (2001)
	Average turnover over past 6 months (no of shares traded / total shares outstanding)	high --> great disagreement about future prospects of firm	
	Age		
	Momentum		

Appendix A.10. Extreme Performance and Other Signals Identified in Past Literature Continued

Fundamental	Pretax Profit Margin Change in quarterly earnings / diluted earnings Change in quarterly sales 5-year quarterly earnings growth rate	Positive Accelerating Accelerating Positive	Reinganum (1988)
	Accruals / Total Assets Cash flow from operating activities Change in quarterly cash flow	(quality of earnings)	Glickman et al (2001)
	% change in receivables relative to change in sales	negatively correlated with market perceptions of quality of earnings	Abarbnell and Bushee (1998)
	Change in asset turnover ratio	forecasts future profitability	Faifield and Yohn (1999)
	% change in current ratio % change in quick ratio % change in inventory turnover inventory / total assets % change in (inventory / total assets) % change in inventory % change in sales % change in depreciation change in dividend per share % change in (depreciation / plant assets) return on opening equity change in return on opening equity % change in (capex / total assets) above, one year lag Debt-equity ratio % change in debt-equity ratio % change in (sales / total assets) return on total assets return on closing equity gross margin ratio % change in (pretax income / sales) sales to total cash % change in total assets cash flow to debt working capital / total assets operating income / total assets repayments of LT debt as % of total LT debt cash dividend / cash flow		Ou and Penman (1989)
	dividend yield		Tunstall, Stein & Carris (2004)
	% change inventory - % change sales % change AR - % change sales % change industry capex - % change firm capex % change sales - % change gross margin % change S + A - % change sales PTEt (Tt-1 - Tt) see AB (1997) pg 4 % change sales - % change order backlog labour force, see variable audit qualification		Lev and Thiagarajan (1993)
Misc	Shares outstanding Comparison of price to two-year high	< 20 million within 15%	Reinganum (1988)
	IBES long-term growth estimate		Glickman et al (2001)
Insider trading	Large transactions Intensity of transactions		Jaffe (1974)
	Size of firm Buy or Sell		Seyhun (1986)
	Type of insider		Reinganum (1988)
Working Capital Management	Net Trade Cycle = (inv + AR - AP) x 365 / sales	inversely related to profitability / shareholder value	Shin and Soenen (1998)
Market and Macro	change in CPI - inflation change in real GNP - economic growth change in Business Inventories - activity		Lev and Thiagarajan (1993)
	change in relative price of low grade bonds -LOG(SPt-1/avSPt-1) -log(P) where p = price of smallest quintile		Keim and Stambaugh (1986)
	3 month NCD rate		Firer and McLeod (1999)
	Change in Business Confidence Index		

Appendix A.11. FTSE Global Classification System on the JSE Securities Exchange

The table shows the classification groups of securities on the JSE Securities exchange according to the FTSE Global Classification System. It shows the breakdown into the three broad categories of Financial, Resource, and Industrial Securities. The table then shows how this group is broken into the 10 economic groups. These are then decomposed into the relevant industrial sectors and finally industrial sub-sectors.

	Economic Group	Industry Sector	Industry Sub-Sector
All Financials	Financials	Banks	Banks
		Insurance	Insurance Brokers
			Insurance Non Life
			Reinsurance
			Other Insurance
		Life Assurance	Life Assurance
		Investment Companies	Investment Companies Eligible
		Real Estate	Real Estate Holding and Development
			Property Agencies
		Speciality and Other Finance	Asset Managers
			Consumer Finance
			Investment Banks
			Mortgage Finance
			Other Financial
		Investment Entities	Investment Entities Ineligible
All Resources	Resources	Mining	Coal
			Gold Mining
			Platinum
			Mining Finance
			Diamond
			Other Mineral Extractors and Mines
		Oil and Gas	Oil and Gas Exploration and Production
			Oil Services
			Oil Integrated
All Industrials	Basic Industries	Chemicals	Chemicals Commodity
			Chemicals Advanced Materials
			Chemicals Speciality
		Construction and Building Materials	Builders Merchants
			Building and Construction Materials
			House Building
			Other Construction
		Forestry and Paper	Forestry
			Paper
		Steel and Other Metals	Non Ferrous Metals
			Steel
	General Industrials	Aerospace and Defence	Aerospace
			Defence
		Diversified Industrials	Diversified Industrials
		Electronic and Electrical Equipment	Electrical Equipment
			Electronic Equipment
		Engineering and Machinery	Commercial Vehicles and Trucks
			Engineering Contractors
			Engineering Fabricators
			Engineering General

Appendix A.11. FTSE Global Classification System on the JSE Securities Exchange

Continued

All Industrials (continued)	**Cyclical Consumer Goods**	Automobiles and Parts	Automobiles
			Auto Parts
			Tyres and Rubber
			Vehicle Distribution
		Household Goods and Textiles	Clothing and Footwear
			Furnishings and Floor Coverings
			Consumer Electronics
			Household Appliances and Housewares
			Leisure Equipment
			Other Textiles and Leather Goods
	Non Cyclical Consumer Goods	Beverages	Beverages Brewers
			Beverages Distillers and Vintners
			Soft Drinks
		Food Producers and Processors	Farming and Fishing
			Food Processors
		Health	Health Maintenance Organisations
			Hospital Management and Long Term Care
			Medical Equipment and Supplies
			Other Health Care
		Personal Care and Household Products	Household Products
			Personal Products
		Pharmaceuticals and Biotechnology	Biotechnology
			Pharmaceuticals
		Tobacco	Tobacco
	Cyclical Services	General Retailers	Discount and Super Stores and Warehouses
			Retailers eCommerce
			Retailers Hardlines
			Retailers Multi Department
			Retailers Soft Goods
		Leisure and Hotels	Gambling
			Hotels
			Leisure Facilities
			Restaurants and Pubs
		Media and Entertainment	Television, Radio and Filmed Entertainment
			Subscription Entertainment Networks
			Media Agencies
			Photography
			Publishing and Printing
		Support Services	Business Support Services
			Delivery Services
			Education Business Train, Employ Agency
			Environmental Control
			Transaction and Payroll Services
			Security and Alarm Services
		Transport	Airlines and Airports
			Rail, Road and Freight
			Shipping and Ports
	Non Cyclical Services	Food and Drug Retailers	Food and Drug Retailers
		Telecommunication Services	Fixed Line Telecommunication Services
			Wireless Telecommunication Services
	Utilities	Electricity	Electricity
		Utilities Other	Gas Distribution
			Multi Utilities
			Water
	Information Technology	Information Technology Hardware	Computer Hardware
			Semiconductors
			Telecommunications Equipment
		Software and Computer Services	Computer Services
			Internet
			Software

Appendix A.12. Definitions of Datastream International and other Database Items

Unless an alternative source is stated, this appendix lists definitions of Datastream International variables used to construct the variables and ratios to be tested in the study. The code used to extract the item from the relevant database is included in brackets after each item. The definitions are sourced from the Datastream International Online Definitions or the definitions from the alternative applicable database.

All Share Index [I-Net Bridge] (J203 / CI01)

This is the value of the JSE Securities Exchange All Share Index. The FTSE / JSE Africa All Share Index (J203) is only available from June 1996. In order to obtain data for the beginning of the sample period, this data was merged with data from the JSE Actuarial All Share Index (CI01). As the value of these two indexes were different at the changeover date, Laspeyres chain indexing methodology was used to splice the data. It should be noted that the two indexes are not identical. The CI01 consisted of all instruments listed on the JSE and is no longer calculated in any form. The J203 consists of the top 99% of eligible listed companies when ranked by full market capitalisation.

Amortisation of intangibles (975)

The amounts shown here is the non-movement of funds as shown in the cashflow/ sources and uses and relating to the intangible assets.

Associates Aftertax Profits (622)

The after tax share of profit of associated companies accounted for under the equity method. Dividends paid by associates are included in the published pre-tax profit of the receiving company.

Base or start date (BDATE)

The base date is the date from which Datastream holds information about the issue. Where the nature of a company's business has changed materially, due to a merger or the splitting off of one or more divisions, Datastream rebases the stock.

Beta factors (BETA)

The beta factor of a stock relates movements in its price to movements in the market as a whole. Over a period it expresses the relative movement of the price against the

market, showing the likely relative change for a given market movement and whether the stock is prone to under- or over-react. In order to display beta calculations, at least 2½ years of data are required.

The beta factor is derived by performing a least squares regression between adjusted prices of the stock and the corresponding Datastream market index. The historic beta so derived is then adjusted using Bayesian techniques to predict the probable behaviour of the stock price on the basis that any extreme behaviour in the past is likely to average out in the future. This adjusted value, or "forecast" beta, is represented by the BETA datatype.

Business Confidence Index [I-Net Bridge] (BCICC)

The Business Confidence Index is generated monthly by the South African Chamber of Business (SACOB) as a measure the level of business confidence within the South African economy.

Capital expenditure contracted (292)

This includes contracts entered into for the future purchase of capital items, expenditure on machinery, equipment, plant, vehicles and buildings.

Capital gearing (%) (731)

Preference capital plus total debt divided by total capital employed plus short term borrowings minus total intangibles.

Cash earnings per share/cash flow per share (CASH)

This is the earnings per share before depreciation, amortization and provisions.

Consumer Price Index [I-Net Bridge] (ECPI)

The Consumer Price Index is the yardstick of the general level of prices in the economy. It is an index of the prices of a representative "basket" of consumer goods and services. The total South African CPI basket consists of about 1 500 different consumer goods and services. Inflation is represented by changes in this index.

Depreciation **(136)**

This includes provisions for amounts written off, and depreciation of tangible fixed assets. Amortisation of intangible assets is included only if a separate breakdown is not disclosed in the annual report.

Dividends per Share **(DPS)**

Dividends per share on a twelve-month rolling basis, taking interim dividends into account.

Earned for Ordinary **(625)**

This is the profit used by the company to calculate earnings per share. This is the net profit after tax, minority interest, pre-acquisition profits, appropriations for capital expenditure (in the case of mining companies) and preference dividends attributable to ordinary shareholders. It includes the share of profits of equity accounted associated companies and subsidiaries. Any extraordinary, exceptional or abnormal items after tax are excluded. Also excluded are any transfers to or from tax equalisation

Earned for ordinary - adjusted **(210)**

Net profit after tax, minority interests and preference dividends. This is the adjusted earnings using the adjusted pre-tax profit and taxation charge, ie. excluding pre-tax extraordinary items, non-operating provisions and transfers to tax-exempt reserves, exchange gains/losses and any other items not relating to the normal trading activities of the company.

Earnings Forecast **(FxMN)**

This is the mean value of all estimates of earnings in x years for a company.

Earnings per share, current rate **(EPS)**

This is the latest annualised rate that may reflect the last financial year or be derived from an aggregation of interim period earnings. For certain countries, for which interim announcements are irregular or lacking in detail, the current earnings per share (EPS) may be a forecast provided by local sources.

Equity capital and reserves **(305)**

The equity share capital and reserves of the company. Preference capital is not included.

- goodwill shown against reserves is transferred to total intangibles
- capital and other grants shown as deferred liabilities are transferred to reserves.
- proposed dividends are deducted if the balance sheet is shown before appropriations

Financial and Industrial 30 [I-Net Bridge] **(J213 / CI21)**

This is the value of the JSE Securities Exchange Financial and Industrial 30 Index. The J213 is only available from June 1995. In order to obtain data for the beginning of the sample period, this data was merged with data from the previous version, the CI21. As the value of these two indexes were different at the changeover date, Laspeyres chain indexing methodology was used to splice the data.

Forward Growth Rate (12 Months) **(F1FD12)**

$$F1FD12 = \frac{(M_1 \times F_1) + ([12 - M_1) \times F_2)}{12}$$

where: M = Number of Month ends to end of Current Fiscal Year. *(Note: The 'Current Fiscal Year' will be FY_1 if the date is before FY_1 Year End and FY_2 if the date is after FY_1 Year End)*

F_1 = Consensus EPS Forecast for Current Fiscal Year

F_2 = Consensus EPS Forecast for Next Fiscal Year

This datatype is particularly useful for time series analysis of earnings forecasts over recent history, especially where the period of measurement incorporates a fiscal year end.

Gross profit on sales **(603)**

Total sales less cost of sales.

Industry Classification Level **(INDC3, INDC4)**

Datastream classifies each company by industry (that is, its primary activity only). Equities with the same industrial classification are grouped into sectors. Datastream industrial classifications exist at six levels:

Level 1	Market data
Level 2	Non-financials Non-financials, excluding resources Resources Financials
Level 3	Resources Basic industries Cyclical consumer goods Non-cyclical consumer goods Cyclical services Non-cyclical services Utilities Information technology Financials
Level 4	Comprising up to 39 sectors, based on the FTSE Actuaries system
Level 5	Comprising up to 11 FTSE Actuaries sub-sectors. Various level 4 sectors are broken down at this level into more detailed descriptions used by the London Stock Exchange
Level 6	Level 6 groups have been devised by Datastream where it is believed that more detailed descriptions than those provided at levels 4 and 5 are appropriate

Equities are classified at the most detailed level appropriate. They are classified by main activity according to the sector definitions published by the FTSE Actuaries.

Institutional Holdings **(NOSHIC)**

The percentage of total shares in issue held as long term strategic holdings by investment banks or institutions seeking a long term return.

Local code **(LOC)**

This is an identification code based on the official local exchange code. It comprises up to 12 characters, prefixed by an alphabetic country code.

South Africa	R:	ABC/D
UK	UK	ABCD
United States	U	123456789

Market value / market capitalisation **(MV)**

Market value is the share price multiplied by the number of ordinary shares in issue. The amount in issue is updated whenever new tranches of stock are issued or after a capital change.

- For companies with more than one class of equity capital, the market value is expressed according to the individual issue.
- Market value is displayed in millions of units of local currency.

Market value to book value (MTBV)

The market value to book value (also called discount to net asset value) divides the market value by the net book value.

NCD Rate (3 Month) [I-Net Bridge] (NC3MM)

This is the interest rate on three month negotiable certificates of deposit.

Net cashflow (1048)

Changes in net cash before the impact of exchange adjustments and reflects cash inflow after financing.

Net profit margin (%) (717)

Profits after tax divided by total sales.

Number of shares in issue (NOSH)

This is the total number of ordinary shares that represent the capital of the company at the current date (that is, no history is stored). The datatype is expressed in thousands. For shares with more than one class of equity issue, (NOSH) is held separately for each issue. The amount is updated whenever new tranches of stock are issued or after capital changes.

Operating profit - adjusted (137)

This is net profit derived from normal activities of the company after depreciation and operating provisions.

Operating profit margin (%) (713)

Operating profit divided by total sales.

Ordinary dividends - net **(187)**

The net amounts proposed on ordinary shares, including any variable amount paid on participating preference shares, saving shares, preferred shares.

Pre-tax profit margin (%) **(716)**

Pretax profit (excluding associates) divided by total sales. (%)

Pre-tax profits **(154)**

The pre-tax profit for the financial period as reported by the company. This includes any dividends received from associated companies.

Price, ask **(PA)**

This is the asking price quoted at close of market.

Price, bid **(PB)**

This is the bid price offered at close of market.

Price, closing **(P)**

The 'current' price on Datastream's equity programs is the latest price available to us from the appropriate market in primary units of currency (except in the case of the UK where price is given in pence). It is the previous day's closing price from the default exchange except where more recent or real-time prices are available, as listed in the Data sources & updating procedures section of this help system.

The 'current' prices taken at the close of market are stored each day. These stored prices are adjusted for subsequent capital actions, and this adjusted figure then becomes the default price offered on all Research programs.

Prices are generally based on 'last trade' or an official price fixing. For stocks which are listed on more than one exchange within a country, default prices are taken from the primary exchange of that country (note that this is not necessarily the 'home' exchange of the stock).

Price/earnings ratio **(PE)**

This is the price divided by the earnings rate per share at the required date.

Producer Price Index [I-Net Bridge] **(EPPI)**

The Producer Price Index measures the price received by a producer. This differs from the CPI in that price subsidation, profits, and taxes may cause the amount received by the producer to differ from what the consumer paid. There is also typically a delay between an increase in the PPI and any resulting increase in the CPI. Many believe that this allows a rough-and-ready prediction of CPI inflation tomorrow based on PPI inflation today.

Quick assets ratio **(742)**

Total current assets minus total stock and work in progress divided by total current liabilities.

Rand-Dollar Exchange Rate [I-Net Bridge] **(USDZAR)**

This is the exchange rate between the US Dollar and the South African Rand. It is used as a proxy for the strength of the rand.

Real Gross Domestic Product **(SARGDP)**

The inflation-adjusted value of GDP, which is used as a measure of the nation's final output.

Resources Index [I-Net Bridge] **(J000 / CI11)**

This is the value of the JSE Securities Exchange All Share Resources Index. The J000 is only available from June 1995. In order to obtain data for the beginning of the sample period, this data was merged with data from the previous version, the CI11. As the value of these two indexes were different at the changeover date, Laspeyres chain indexing methodology was used to splice the data.

Return index **(RI)**

The return index (RI) shows a theoretical growth in value of a share holding over a specified period, assuming that dividends are re-invested to purchase additional units of equity at the closing price applicable on the ex-dividend date.

$$RI_{t-1} \times \frac{P_t}{P_{t-1}}$$

except when t = ex-date of the dividend payment Dt then:

$$RI_{t-1} \times \frac{P_t + D_t}{P_{t-1}}$$

where P_t = price on ex-date

P_{t-1} = price on previous day

D_t = dividend payment associated with ex-date t

Return on Equity % (Published) (1506)

Earned for ordinary divided by equity capital and reserves minus total intangibles.

$$\frac{\text{Earned for Ordinary}}{\text{(Equity Capital and Reserves - Total Intangibles)}}$$

For South Africa the intangibles mentioned above do not form part of the calculation.

Selling and administration expenses (608)

This comprises wages and salaries, depreciation on vehicles and office equipment and other expenses relating to distribution and administration.

Strategic Holdings (NOSHST)

The percentage of total shares in issue held strategically and not available to ordinary shareholders. Share holdings held by investors that would not, in the normal course come into the open market for trading are treated as strategic holdings. This includes holding by directors or founders for control, government holdings as a promoter or acquirer and cross-holdings within a group.

Total assets (392)

The sum of tangible fixed assets, intangible assets, investments (including associates), other assets, total stocks & WIP, total debtors & equivalent and cash & cash equivalents.

- deferred tax, if shown as an asset, is offset against any deferred tax liability
- goodwill carried in reserves is transferred to intangible assets
- advances on work in progress if disclosed as a liability by the company has been offset against stocks and work in progress

Total cash and equivalent **(375)**

For industrials this includes cash, bank balances, short-term loans and deposits, and investments shown under current assets. For banks and finance companies it includes cash and balances with other banks, money at call and short notice, treasury bills and term deposits maturing under one month. Placements with banks are excluded.

Total current assets **(376)**

Includes stocks, work in progress, trade and other debtors, cash and equivalent, and any other current assets. Trade accounts receivable after 1-year are included.

Total current liabilities **(389)**

Includes current provisions, trade and other creditors, borrowings repayable within 1-year and any other current liabilities. Trade accounts payable after 1-year are included.

Total debt **(1301)**

The total of all long and short term borrowings, including any subordinate debt and 'debt like hybrid finance instruments

Total loan capital **(321)**

This represents the total loan capital repayable after 1-year. It includes, debentures, bonds, convertibles, and 'debt like' hybrid financial instruments.

Total number of employees **(219)**

The average number of employees as disclosed by the company. The year end number is used if the average number is not disclosed.

Total sales **(104)**

The amount of sales of goods and services to third parties relating to the normal industrial activities of the company. It is net of sales related taxes and excludes any royalty income, rental income and other operating income.

Total stock and work in progress **(364)**

This includes finished goods, raw materials, work in progress less any advances paid and any other stocks. It is stated net of any provisions for obsolete stocks.

Trade creditors **(276)**

Includes trade payables within and after one year as specified by the company relating to the normal business activities of the company. Bills payable are not included.

Trade debtors **(287)**

Includes trade receivables within and after one year as specified by the company relating to the normal business activities of the company. This figure is shown net of provision for bad and doubtful debts.

Turnover by volume **(VO)**

This shows the number of shares traded for a stock on a particular day. The figure is always expressed in thousands. Daily figures are adjusted for capital changes; non-daily figures are not adjusted. For stocks which are traded on more than one exchange within a country, default volumes are taken from the primary exchange of that country (note that this is not necessarily the 'home' exchange of the stock). The exception is for US listed shares where volumes are consolidated across all exchanges on which a share is listed.

Working capital ratio **(741)**

Total current assets divided by total current liabilities.

Appendix A.13. Number of Observations

The table shows the number of observations per variable in each sample year in both the in- and out-of-sample groups of shares. In addition, the table shows the total number of observations per variable, the total number of observations per year and the average number of observations per year. The constant increase in the availability of data over time is evident from the table.

	Insample										Out-of-sample									
	1998	1998	1997	1998	1999	2000	2001	2002	2003	2004	Total	1995	1998	1997	1998	1999	2000	2001	2002	2003	2004	Total
INST_OWN	0	0	0	0	0	0	0	895	1146	1184	3225	0	0	0	0	0	0	0	764	1170	1210	3144
MAN_OWN	0	0	0	0	0	0	0	703	1158	1205	3066	0	0	0	0	0	0	0	773	1173	1210	3156
PE	715	793	854	970	1089	1098	1089	1132	1175	1161	10076	720	721	860	954	1021	1086	1127	1103	1052	1105	9749
EY	793	848	918	1023	1154	1209	1202	1212	1226	1243	10828	757	832	922	1005	1068	1160	1202	1209	1217	1249	10641
MV	813	876	942	1072	1167	1200	1207	1213	1235	1260	10985	780	868	953	1046	1129	1170	1197	1198	1249	1230	10820
LN_MV	813	876	942	1072	1175	1212	1221	1241	1257	1284	11093	780	868	953	1046	1132	1183	1214	1231	1261	1272	10940
BETA	1248	1248	1248	1248	1248	1248	1248	1248	1248	1248	12480	1236	1236	1236	1236	1236	1236	1236	1236	1236	1236	12360
MTB	362	372	444	988	1106	1161	1173	1182	1190	1212	9190	330	372	507	855	1025	1098	1144	1169	1180	1178	8866
VOL_3	387	601	729	903	923	990	967	857	996	1113	8468	409	631	733	873	872	984	976	896	992	1070	8436
LN_VOL_3	383	603	729	905	927	989	966	856	996	1115	8469	406	629	733	874	871	983	975	896	990	1071	8428
VOL_6	413	619	737	912	938	1010	982	873	1018	1122	8624	416	649	741	882	879	993	991	902	996	1085	8634
LN_VOL_6	413	619	738	914	940	1010	981	873	1017	1123	8628	420	649	744	884	880	997	993	906	1005	1089	8667
VOL_12	424	627	740	913	939	1014	984	881	1020	1124	8666	422	653	746	883	882	996	996	911	1005	1087	8681
LN_VOL_12	424	627	741	915	940	1014	984	881	1021	1124	8671	428	656	749	886	883	1000	998	913	1014	1091	8618
VOL_18	424	627	739	914	939	1014	984	883	1020	1125	8669	425	653	746	884	881	998	993	913	1009	1088	8590
LN_VOL_18	424	627	742	915	940	1014	984	882	1021	1125	8674	430	656	749	887	883	1002	998	914	1014	1091	8624
VOL_24	425	629	739	914	939	1014	984	883	1021	1123	8671	425	655	745	884	882	999	995	915	1012	1089	8601
LN_VOL_24	425	629	742	915	940	1014	984	882	1022	1125	8678	429	657	749	887	883	1002	998	915	1015	1092	8627
SDEV_VOL	417	621	774	916	1010	1027	1015	953	1051	1145	8929	412	636	779	883	989	1011	1021	998	1029	1111	8849
LN_SDEV_VOL	414	619	775	917	1007	1026	1014	951	1044	1143	8910	407	637	779	881	969	1006	1022	995	1026	1107	8831
VOLtNOSHARES	432	642	750	926	943	1008	979	886	1030	1129	8725	435	675	758	895	890	1009	1003	917	1021	1094	8697
LN_VOLtNOSHARES	428	639	750	927	946	1014	985	885	1025	1126	8725	434	670	758	895	888	1006	999	916	1016	1092	8676
AGE	813	876	942	1072	1175	1212	1221	1241	1257	1284	11093	780	868	953	1046	1132	1183	1214	1231	1261	1272	10940
MOM_1	807	863	934	1049	1168	1210	1215	1232	1252	1283	11013	774	858	944	1032	1125	1175	1205	1226	1257	1271	10887
MOM_3	795	850	918	1020	1153	1210	1217	1231	1251	1276	10921	773	837	927	1012	1114	1167	1206	1224	1252	1272	10784
MOM_6	775	836	902	975	1130	1206	1215	1223	1249	1269	10780	766	806	910	991	1095	1153	1203	1216	1244	1269	10655
MOM_12	738	807	873	923	1066	1173	1212	1218	1241	1256	10607	754	785	866	953	1046	1122	1173	1204	1231	1261	10375
MOM_18	737	771	835	883	983	1131	1207	1213	1226	1249	10247	749	763	803	910	995	1086	1150	1194	1218	1248	10114
MOM_24	726	739	796	864	936	1067	1175	1212	1221	1240	9976	738	749	767	867	953	1038	1122	1170	1212	1231	9847
NOSHARES	813	876	942	1064	1163	1200	1208	1229	1245	1272	11012	768	856	941	1043	1126	1171	1200	1207	1237	1243	10792
LN_NOSHARES	813	876	942	1072	1175	1212	1221	1241	1257	1284	11093	780	868	953	1046	1132	1183	1214	1231	1261	1272	10940
MAXP_12	808	868	935	1057	1169	1211	1219	1239	1254	1283	11043	778	858	944	1038	1127	1179	1211	1230	1258	1272	10986
MAXP_24	808	868	935	1059	1169	1212	1220	1239	1254	1283	11047	778	858	944	1038	1127	1179	1212	1230	1258	1272	10996
MAXP_60	808	869	935	1059	1169	1212	1220	1239	1254	1284	11049	778	858	944	1038	1127	1179	1213	1230	1258	1272	10997
EARN	367	372	408	759	1107	1151	1148	1163	1169	1188	8832	334	368	446	763	1007	1102	1129	1171	1165	1162	8647
EARNG_3	352	371	394	607	1030	1145	1148	1161	1168	1181	8567	316	348	402	624	946	1072	1126	1151	1159	1178	8322
EARNG_6	349	368	382	501	961	1134	1138	1155	1161	1177	8326	317	335	386	536	895	1051	1114	1146	1154	1170	8104
EARNG_12	348	367	372	408	727	1077	1136	1143	1142	1171	7881	317	317	360	436	726	977	1088	1139	1149	1156	7865
EARNG_24	351	348	357	372	408	724	1074	1131	1130	1152	7047	320	319	322	360	436	721	984	1081	1137	1152	6932
EARNG_60	340	348	367	541	348	354	360	396	722	1060	4856	304	341	360	524	327	319	360	434	718	976	4663
EPS	793	848	918	1023	1154	1202	1196	1211	1233	1260	10838	752	821	912	1013	1100	1170	1211	1213	1218	1220	10630
LN_EPS	690	781	826	950	1067	1093	1090	1132	1177	1163	9969	722	722	856	954	1016	1087	1126	1111	1053	1106	9755
ROE	360	354	380	412	746	1073	1121	1156	1170	1166	7938	322	339	389	481	777	991	1062	1151	1175	1175	7882
PRETAX_PM	355	360	389	720	1046	1090	1128	1162	1180	1195	8625	322	347	426	744	975	1055	1116	1142	1140	1123	8390
ACCtTA	367	372	408	759	1105	1138	1164	1166	1175	1195	8861	334	368	447	775	1017	1091	1155	1163	1162	1188	8700
CH_CF	320	343	355	380	655	923	1007	1073	1115	1136	7307	305	298	341	432	678	919	994	1076	1134	1167	7344
CH_ARtSALES	320	322	328	339	610	867	929	998	1016	1020	6749	272	276	285	358	611	792	859	943	990	989	6375
CH_ASSTURN	348	355	360	389	693	992	1064	1117	1152	1180	7850	315	317	347	426	716	955	1059	1119	1149	1152	7555
CH_CURRENT	324	331	336	344	627	913	956	975	994	1000	6800	238	245	268	317	564	757	813	844	864	886	6796
CH_QUICK	324	331	336	337	617	865	913	965	987	995	6670	238	245	268	317	563	738	780	828	864	886	6727
CH_INVTURN	312	319	324	332	575	794	832	899	941	947	6275	250	257	280	348	574	710	758	816	844	834	6869
INVtTA	343	348	364	682	985	992	1029	1033	1048	1063	7887	298	316	389	692	904	956	1002	1052	1054	1056	7719
CH_INVtTA	336	343	348	360	660	930	968	1022	1033	1048	7048	291	293	306	387	677	854	925	1001	1040	1052	6826
CH_INV	324	331	336	347	592	831	856	905	947	960	6429	262	269	292	348	566	716	780	811	879	858	5761
CH_SALES	348	355	360	389	705	1018	1074	1117	1152	1180	7708	315	317	347	426	729	967	1062	1121	1149	1152	7585
CH_DEP	264	271	283	312	645	960	1010	1041	1056	1076	6938	301	291	327	389	658	852	926	971	1005	1009	6729
CH_DPS	585	641	686	718	762	829	820	836	899	986	7784	629	639	687	770	839	835	843	839	881	963	7926
CH_ROE	349	350	352	380	412	742	1042	1113	1151	1156	7047	265	317	339	389	481	766	978	1066	1146	1162	6961
CAPGEAR	367	372	408	759	1105	1127	1163	1175	1180	1195	8851	334	368	447	774	1006	1091	1155	1185	1188	1188	8736
CH_CAPGEAR	302	300	300	335	622	921	1003	1040	1021	996	6842	315	316	345	423	657	848	889	924	970	970	6657
ROA	367	372	408	759	1100	1124	1159	1164	1169	1181	8803	334	368	446	763	1006	1091	1155	1157	1169	1166	8655
GM	319	331	344	432	548	656	569	623	860	944	5626	267	284	357	487	553	629	666	693	813	897	5846
CH_EBTtSALES	348	355	360	389	711	1017	1081	1127	1151	1180	7719	315	317	347	426	744	975	1055	1109	1143	1124	7585
SALEStCASH	355	360	389	717	1033	1047	1087	1084	1162	1183	8417	301	316	418	731	929	1013	1058	1095	1139	1171	8171
LN_SALEStCASH	355	360	389	699	997	1022	1086	1096	1174	1195	8373	301	316	401	700	900	989	1034	1071	1108	1118	7938
CH_TA	360	367	372	404	735	1070	1106	1162	1175	1180	7833	327	329	358	445	770	1002	1064	1145	1183	1185	7828
CASHtDEBT	294	300	336	645	948	981	1023	1011	1018	1058	7614	290	328	405	651	843	858	906	970	970	958	7179
WCtTA	331	336	344	636	942	970	992	996	1000	1008	7555	245	268	317	571	763	815	844	874	888	888	6473
OPINCtTA	355	360	396	740	1064	1062	1137	1170	1180	1195	8679	315	338	428	762	994	1079	1146	1158	1169	1169	8888
DIVtCF	309	354	385	538	668	749	593	534	560	502	5192	269	327	402	543	638	711	746	720	670	608	5634
DY	797	861	934	1062	1175	1212	1221	1241	1256	1276	11035	734	838	952	1033	1121	1176	1205	1222	1257	1272	10812
CH_INVtSALES	312	319	324	332	578	796	838	905	947	960	6311	250	257	280	346	559	711	780	817	872	847	5899
CH_ARtSALES	324	331	336	345	633	869	900	993	1020	1046	6799	279	281	304	370	624	805	889	958	1002	1006	6518
CH_SALESIGM	307	319	331	344	425	521	511	532	623	859	4772	260	257	284	357	469	527	556	616	689	803	4818
CH_SAtSALES	37	36	44	92	148	153	168	220	286	449	1633	24	24	24	48	119	178	284	354	410	452	1917
LABOUR	235	247	253	277	410	542	617	760	879	947	5167	240	233	241	276	367	452	583	681	813	862	4728
NTC	331	336	345	638	920	941	985	1008	1036	1051	7591	286	304	370	637	843	910	959	1004	1008	996	7317
GFORECAST_12	393	467	530	635	776	815	761	715	639	636	6367	430	568	567	730	861	868	863	755	705	675	7022
REVISION_12	364	380	470	507	638	777	837	822	757	691	6243	373	430	532	558	727	846	834	790	755	662	6507
REVISION_24	150	219	386	474	526	724	802	786	720	666	5455	143	230	382	532	616	809	794	761	710	643	6022
REVISION_36	25	7	45	59	103	238	584	527	404	327	2320	25	2	58	71	101	260	610	516	500	445	2588
RSTRENGTH_ALSI	752	813	876	942	1072	1175	1212	1221	1241	1257	10561	757	780	868	953	1046	1132	1183	1214	1231	1261	10426
RSTRENGTH_SUB	752	813	876	942	1072	1175	1212	1221	1241	1257	10561	757	780	868	953	1046	1132	1183	1214	1231	1261	10426
CH_RSTRENGTH_ALSI	752	813	876	942	1072	1175	1212	1221	1241	1257	10561	757	780	868	953	1046	1132	1183	1214	1231	1261	10426
CH_RSTRENGTH_SUB	752	813	876	942	1072	1175	1212	1221	1241	1257	10561	757	780	868	953	1046	1132	1183	1214	1231	1261	10426
WRSTRENGTH_ALSI	752	813	876	942	1072	1175	1212	1221	1241	1257	10561	757	780	868	953	1046	1132	1183	1214	1231	1261	10426
WRSTRENGTH_SUB	752	813	876	942	1072	1175	1212	1221	1241	1257	10561	757	780	868	953	1046	1132	1183	1214	1231	1261	10426
POS_SALES	348	355	360	389	712	1029	1092	1128	1162	1180	7755	315	317	347	426	744	975	1062	1121	1149	1152	7608
POS_PRETAX	355	360	389	720	1046	1100	1130	1162	1180	1195	8637	322	347	426	744	975	1055	1116	1149	1152	1135	8421
POS_OP	355	360	389	713	1033	1074	1128	1162	1180	1195	8589	315	326	416	736	959	1055	1116	1148	1150	1135	8368
POS_NET	355	360	389	720	1047	1111	1130	1162	1180	1195	8649	322	347	426	736	959	1062	1121	1149	1152	1135	8409
POS_ROE	360	354	380	412	746	1073	1121	1158	1170	1173	7846	322	339	389	481	777	1001	1068	1159	1175	1175	7906
Total	**42809**	**47716**	**52224**	**64071**	**79746**	**90190**	**92784**	**94670**	**99376**	**102706**	**786291**	**40871**	**46311**	**52495**	**64416**	**76928**	**86774**	**91307**	**94177**	**98165**	**100276**	**751709**
Average	**466**	**519**	**568**	**696**	**867**	**980**	**1009**	**1029**	**1080**	**1116**	**8329**	**444**	**503**	**571**	**700**	**836**	**943**	**992**	**1024**	**1067**	**1090**	**8171**

Appendix B

This appendix refers to Chapter 4: Descriptive Statistics

Appendix B.1. Descriptive Statistics

The table shows descriptive statistics for all variables included in the study. These descriptive statistics include means, medians, standard deviations, kurtosis and skewness. The table provides descriptive statistics for the entire sample as well as separately for the in- and out-of-sample groups of securities. Descriptive statistics are provided both before and after adjustment for outliers through winsorisation and dropping of outliers so that the effect of the process can be gauged.

	Mean						Median					
	Before Adjustment			After Adjustment			Before Adjustment			After Adjustment		
	All	Insample	Outsample	All	Insample	Outsample	All	Insample	Outsample	All	Insample	Outsample
INST_OWN	0.04	0.04	0.04	0.03	0.03	0.04	0.01	0.01	0.01	0.01	0.01	0.01
MAN_OWN	0.41	0.43	0.39	0.41	0.43	0.39	0.37	0.39	0.35	0.37	0.39	0.35
PE	23.30	27.64	18.82	15.08	15.89	14.24	10.20	10.20	10.30	10.20	10.20	10.30
EY	0.09	0.09	0.09	0.11	0.10	0.11	0.09	0.09	0.09	0.09	0.09	0.09
MV	5749.53	5923.45	5573.19	4073.61	3823.44	4327.59	871.14	659.80	1121.61	841.28	645.34	1090.67
LN_MV	6.81	6.65	6.97	6.81	6.65	6.97	6.77	6.49	7.02	6.77	6.49	7.02
BETA	0.59	0.57	0.61	0.59	0.57	0.61	0.58	0.54	0.59	0.58	0.54	0.59
MTB	2.90	3.40	2.38	2.03	2.06	2.00	1.47	1.47	1.46	1.46	1.46	1.45
VOL_3	5.10	5.02	5.18	2.62	2.55	2.68	0.76	0.75	0.76	0.75	0.75	0.76
LN_VOL_3	-0.43	-0.41	-0.44	-0.42	-0.41	-0.44	-0.28	-0.28	-0.27	-0.28	-0.28	-0.27
VOL_6	2.91	3.44	2.38	1.69	1.82	1.57	0.65	0.65	0.64	0.65	0.65	0.64
LN_VOL_6	-0.61	-0.61	-0.62	-0.61	-0.60	-0.62	-0.43	-0.42	-0.44	-0.43	-0.42	-0.44
VOL_12	2.31	2.71	1.90	1.42	1.53	1.31	0.60	0.60	0.60	0.59	0.60	0.59
LN_VOL_12	-0.73	-0.72	-0.75	-0.73	-0.71	-0.74	-0.52	-0.51	-0.52	-0.52	-0.51	-0.52
VOL_18	2.02	2.30	1.74	1.33	1.41	1.25	0.59	0.59	0.58	0.59	0.59	0.58
LN_VOL_18	-0.77	-0.76	-0.79	-0.77	-0.76	-0.78	-0.53	-0.52	-0.54	-0.53	-0.52	-0.54
VOL_24	2.00	2.27	1.73	1.31	1.37	1.25	0.58	0.59	0.58	0.58	0.59	0.58
LN_VOL_24	-0.79	-0.78	-0.80	-0.79	-0.78	-0.79	-0.54	-0.53	-0.55	-0.54	-0.53	-0.55
SDEV_VOL	2.99	3.44	2.54	1.63	1.72	1.53	0.55	0.54	0.56	0.55	0.54	0.56
LN_SDEV_VOL	-0.69	-0.69	-0.69	-0.69	-0.69	-0.68	-0.59	-0.62	-0.57	-0.59	-0.62	-0.57
VOLtNOSHARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LN_VOLtNOSHARES	-7.82	-7.82	-7.82	-7.81	-7.81	-7.81	-7.59	-7.60	-7.59	-7.59	-7.60	-7.59
AGE	10.27	10.29	10.26	10.27	10.29	10.26	8.48	8.44	8.53	8.48	8.44	8.53
MOM_1	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
MOM_3	0.06	0.07	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04
MOM_6	0.13	0.14	0.12	0.11	0.11	0.10	0.07	0.07	0.08	0.07	0.07	0.08
MOM_12	0.28	0.30	0.26	0.23	0.25	0.22	0.15	0.15	0.15	0.15	0.15	0.15
MOM_18	0.47	0.50	0.43	0.39	0.42	0.37	0.23	0.22	0.23	0.22	0.21	0.23
MOM_24	0.70	0.75	0.65	0.56	0.59	0.52	0.29	0.28	0.29	0.28	0.27	0.28
NOSHARES	283262.86	241590.15	325518.37	223179.14	186334.65	260774.72	122000.00	108536.00	146800.00	120000.00	108105.00	140140.00
LN_NOSHARES	11.70	11.60	11.80	11.70	11.60	11.80	11.71	11.59	11.90	11.71	11.59	11.90
MAXP_12	0.83	0.82	0.83	0.83	0.82	0.83	0.87	0.86	0.88	0.87	0.86	0.88
MAXP_24	0.76	0.75	0.76	0.76	0.75	0.76	0.81	0.80	0.82	0.81	0.80	0.82
MAXP_60	0.65	0.64	0.66	0.65	0.64	0.66	0.68	0.66	0.70	0.68	0.66	0.70
EARN	361183.67	329332.55	393574.21	268754.90	248964.92	288968.27	82807.00	61441.00	105900.00	79972.00	59645.00	100161.00
EARNG_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EARNG_6	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
EARNG_12	0.03	0.02	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01
EARNG_24	0.08	0.07	0.10	0.05	0.06	0.05	0.03	0.04	0.03	0.03	0.04	0.03
EARNG_60	0.23	0.20	0.26	0.19	0.17	0.21	0.10	0.10	0.11	0.10	0.10	0.11
EPS	1.73	1.88	1.57	1.38	1.40	1.35	0.58	0.56	0.58	0.57	0.55	0.58
LN_EPS	-0.38	-0.39	-0.37	-0.38	-0.39	-0.37	-0.34	-0.34	-0.36	-0.34	-0.34	-0.36
ROE	0.05	-0.13	0.24	0.21	0.23	0.20	0.19	0.19	0.19	0.19	0.19	0.19
PRETAX_PM	7.96	0.28	15.84	0.11	0.10	0.12	0.09	0.08	0.10	0.09	0.08	0.10
ACCtTA	-0.02	-0.02	-0.02	-0.02	-0.03	-0.01	-0.02	-0.02	-0.01	-0.01	-0.02	-0.01
CH_CF	0.23	0.25	0.21	0.11	0.14	0.08	0.06	0.06	0.06	0.06	0.06	0.06
CH_ARtSALES	0.14	0.18	0.11	0.16	0.17	0.14	0.12	0.12	0.11	0.12	0.12	0.11
CH_ASSTURN	0.14	0.10	0.19	0.05	0.05	0.05	0.02	0.01	0.02	0.01	0.01	0.02
CH_CURRENT	0.10	0.07	0.14	0.04	0.02	0.05	0.00	0.00	0.01	0.00	0.00	0.01
CH_QUICK	0.15	0.08	0.23	0.05	0.03	0.08	0.00	0.00	0.01	0.00	0.00	0.01
CH_INVTURN	3.18	-6.21	13.61	1.03	0.94	1.14	0.18	0.22	0.11	0.17	0.22	0.11
INVtTA	0.15	0.17	0.13	0.15	0.17	0.13	0.12	0.15	0.10	0.12	0.15	0.10
CH_INVtTA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH_INV	1.91	2.98	0.72	0.29	0.33	0.23	0.11	0.11	0.11	0.11	0.11	0.11
CH_SALES	0.54	0.28	0.80	0.23	0.21	0.24	0.14	0.13	0.14	0.14	0.13	0.14
CH_DEP	5.59	3.39	7.85	0.51	0.41	0.62	0.15	0.15	0.14	0.15	0.15	0.14
CH_DPS	0.19	0.19	0.19	0.13	0.15	0.11	0.13	0.15	0.11	0.13	0.14	0.11
CH_ROE	-0.27	-0.52	-0.01	-0.03	-0.04	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
CAPGEAR	0.21	0.22	0.21	0.21	0.21	0.21	0.17	0.19	0.16	0.17	0.19	0.16
CH_CAPGEAR	1.49	0.69	2.32	0.40	0.35	0.45	-0.03	-0.02	-0.04	-0.04	-0.02	-0.05
ROA	0.07	0.06	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
GM	0.24	0.23	0.24	0.24	0.24	0.24	0.19	0.19	0.19	0.19	0.19	0.19
CH_EBTtSALES	3.89	0.54	7.31	-0.28	0.00	-0.57	-0.03	-0.04	-0.03	-0.04	-0.04	-0.03
SALEStCASH	128.84	190.77	65.03	36.50	49.52	23.08	9.45	10.18	8.54	9.36	10.03	8.50
LN_SALEStCASH	2.42	2.54	2.29	2.40	2.51	2.28	2.28	2.35	2.21	2.28	2.34	2.21
CH_TA	0.28	0.31	0.25	0.18	0.18	0.17	0.11	0.11	0.11	0.11	0.11	0.11
CASHtDEBT	3.90	2.68	5.19	0.96	1.08	0.83	0.05	0.04	0.06	0.05	0.04	0.05
WCtTA	0.55	0.58	0.51	0.55	0.58	0.51	0.57	0.62	0.53	0.57	0.62	0.53
OPINCtTA	0.10	0.10	0.10	0.10	0.10	0.09	0.10	0.10	0.09	0.10	0.10	0.09
DIVtCF	-4.86	-9.22	-0.86	-0.04	-0.08	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
DY	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.03	0.02
CH_INVtSALES	1.38	2.70	-0.07	0.04	0.05	0.04	-0.03	-0.03	-0.02	-0.03	-0.03	-0.02
CH_ARtSALES	-0.08	0.12	-0.30	0.02	0.00	0.05	-0.02	-0.03	-0.02	-0.02	-0.03	-0.02
CH_SALESIGM	-0.63	-0.22	-1.04	-0.11	-0.06	-0.15	0.00	0.00	-0.01	0.00	0.00	-0.01
CH_SAtSALES	0.20	0.21	0.19	0.05	0.03	0.07	-0.01	-0.02	0.00	-0.01	-0.02	0.00
LABOUR	-0.17	-0.19	-0.15	-0.14	-0.15	-0.13	-0.13	-0.12	-0.14	-0.13	-0.12	-0.13
NTC	97.68	99.40	95.87	76.74	78.89	74.52	60.61	63.57	56.84	60.18	62.17	56.84
GFORECAST_12	3.20	3.95	2.51	2.74	3.13	2.39	1.48	1.60	1.40	1.46	1.58	1.39
REVISION_12	-0.09	-0.07	-0.11	-0.08	-0.08	-0.08	-0.06	-0.08	-0.04	-0.06	-0.08	-0.04
REVISION_24	0.00	0.05	-0.05	-0.05	-0.04	-0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
REVISION_36	0.03	0.04	0.03	0.05	0.02	0.08	0.01	0.00	0.02	0.01	0.00	0.02
RSTRENGTH_ALSI	0.50	0.51	0.50	0.50	0.51	0.50	0.51	0.51	0.50	0.51	0.51	0.50
RSTRENGTH_SUB	0.51	0.51	0.50	0.51	0.51	0.50	0.51	0.51	0.50	0.51	0.51	0.50
CH_RSTRENGTH_ALSI	0.06	0.06	0.06	0.06	0.06	0.06	0.04	0.04	0.05	0.04	0.04	0.05
CH_RSTRENGTH_SUB	0.06	0.06	0.06	0.06	0.06	0.06	0.04	0.03	0.05	0.04	0.03	0.05
WRSTRENGTH_ALSI	0.50	0.51	0.50	0.50	0.51	0.50	0.51	0.51	0.50	0.51	0.51	0.50
WRSTRENGTH_SUB	0.51	0.51	0.50	0.51	0.51	0.50	0.51	0.51	0.50	0.51	0.51	0.50
POS_SALES	12.84	12.73	12.94	12.82	12.72	12.92	9.00	9.00	9.00	9.00	9.00	9.00
POS_PRETAX	13.63	13.86	13.40	13.63	13.85	13.40	10.00	11.00	9.00	10.00	11.00	9.00
POS_OP	13.52	13.57	13.48	13.52	13.55	13.48	10.00	11.00	9.00	10.00	11.00	9.00
POS_NET	13.64	13.98	13.30	13.64	13.97	13.30	10.00	11.00	9.00	10.00	11.00	9.00
POS_ROE	13.32	13.01	13.63	13.31	12.99	13.63	10.00	9.00	10.00	10.00	9.00	10.00

Appendix B.1. Descriptive Statistics

Continued.

	Standard Deviation						Kurtosis					
	Before Adjustment			After Adjustment			Before Adjustment			After Adjustment		
	All	Insample	Outsample	All	Insample	Outsample	All	Insample	Outsample	All	Insample	Outsample
INST_OWN	0.07	0.08	0.07	0.05	0.05	0.05	30.06	19.53	43.98	2.40	2.93	1.99
MAN_OWN	0.27	0.27	0.26	0.27	0.27	0.26	-0.97	-1.08	-0.85	-0.97	-1.08	-0.85
PE	291.09	389.55	124.36	17.62	21.11	13.01	4010.86	2444.26	1419.78	28.73	24.96	9.30
EY	0.32	0.36	0.27	0.11	0.11	0.11	243.38	217.18	253.77	5.85	6.71	4.75
MV	16419.96	19435.50	12646.82	7840.54	7804.25	7869.44	70.67	66.90	22.17	7.13	8.31	6.03
LN_MV	2.01	2.04	1.97	2.01	2.04	1.97	-0.39	-0.31	-0.40	-0.40	-0.31	-0.41
BETA	0.24	0.27	0.22	0.24	0.26	0.22	1.07	1.35	0.28	0.88	1.11	0.21
MTB	21.07	29.15	4.86	1.86	1.93	1.78	1256.30	670.97	302.16	5.76	6.08	5.12
VOL_3	89.54	56.60	113.39	6.62	6.10	7.10	9181.46	1615.97	7059.65	31.82	24.26	34.73
LN_VOL_3	1.85	1.84	1.85	1.81	1.80	1.82	1.39	1.46	1.33	0.75	0.75	0.74
VOL_6	34.45	47.21	11.71	3.38	3.94	2.69	4488.30	2530.86	879.74	27.12	25.84	11.58
LN_VOL_6	1.78	1.77	1.78	1.74	1.73	1.75	1.37	1.57	1.17	0.73	0.76	0.70
VOL_12	30.71	42.51	8.52	2.64	3.10	2.07	7022.88	3807.28	532.71	26.27	24.67	10.09
LN_VOL_12	1.75	1.75	1.76	1.72	1.71	1.73	1.30	1.43	1.18	0.68	0.67	0.69
VOL_18	25.94	35.90	7.33	2.35	2.68	1.96	11167.95	6073.30	577.17	21.25	21.50	10.02
LN_VOL_18	1.75	1.74	1.76	1.72	1.71	1.73	1.20	1.30	1.10	0.64	0.64	0.64
VOL_24	26.57	36.70	7.80	2.23	2.46	1.97	10307.29	5641.73	752.24	17.10	18.37	10.43
LN_VOL_24	1.76	1.75	1.77	1.73	1.72	1.74	1.22	1.23	1.21	0.61	0.59	0.64
SDEV_VOL	54.52	67.69	36.72	3.58	3.96	3.15	4849.12	3733.40	3840.62	28.68	28.12	24.34
LN_SDEV_VOL	1.71	1.72	1.70	1.66	1.69	1.63	10.51	1.10	20.38	0.58	0.52	0.63
VOLtNOSHARES	0.08	0.03	0.11	0.00	0.00	0.00	13342.16	1322.50	7417.62	36.95	24.67	34.43
LN_VOLtNOSHARES	1.97	1.94	1.99	1.95	1.92	1.97	0.67	0.65	0.69	0.36	0.36	0.36
AGE	7.69	7.73	7.65	7.69	7.73	7.65	0.91	0.87	0.96	0.91	0.87	0.96
MOM_1	0.16	0.17	0.15	0.13	0.14	0.13	52.39	68.13	19.32	1.44	1.41	1.45
MOM_3	0.30	0.33	0.28	0.24	0.25	0.23	70.86	46.88	112.10	1.17	1.15	1.11
MOM_6	0.48	0.52	0.44	0.37	0.38	0.35	86.75	78.99	95.17	1.25	1.30	1.07
MOM_12	0.81	0.89	0.73	0.59	0.62	0.56	79.34	91.30	41.51	1.43	1.54	1.05
MOM_18	1.26	1.35	1.15	0.85	0.92	0.79	65.04	58.24	73.10	2.22	2.34	1.54
MOM_24	1.91	2.02	1.79	1.13	1.22	1.04	87.35	74.52	105.21	2.94	2.90	2.47
NOSHARES	562813.21	541071.15	581014.05	273017.60	215684.13	316759.91	41.69	61.94	27.03	6.12	7.28	4.18
LN_NOSHARES	1.31	1.22	1.39	1.30	1.21	1.39	0.26	0.64	-0.01	0.03	0.33	-0.20
MAXP_12	0.24	0.25	0.23	0.23	0.24	0.23	2.66	3.70	1.20	0.30	0.31	0.27
MAXP_24	0.28	0.29	0.27	0.28	0.28	0.27	0.51	0.79	0.16	-0.32	-0.32	-0.32
MAXP_60	0.32	0.32	0.32	0.32	0.32	0.32	-0.53	-0.41	-0.63	-0.91	-0.91	-0.88
EARN	973867.56	939321.36	1006806	534373.35	509284.43	558143.09	47.70	71.74	29.06	6.73	6.70	6.58
EARNG_3	0.20	0.24	0.13	0.07	0.07	0.06	338.65	267.29	191.24	27.17	29.29	23.15
EARNG_6	0.36	0.36	0.36	0.15	0.13	0.17	115.20	152.43	76.74	24.45	23.66	23.15
EARNG_12	0.53	0.54	0.52	0.30	0.27	0.32	110.73	165.97	44.00	18.53	19.59	17.08
EARNG_24	0.63	0.57	0.69	0.35	0.32	0.38	126.25	196.73	84.70	18.06	18.66	16.89
EARNG_60	0.81	0.60	0.98	0.44	0.32	0.53	838.52	117.17	778.66	19.19	12.74	15.94
EPS	4.04	4.96	2.80	2.04	2.09	1.99	107.83	90.76	15.09	5.45	5.79	4.97
LN_EPS	1.44	1.49	1.39	1.44	1.49	1.38	-0.07	0.00	-0.19	-0.08	-0.02	-0.21
ROE	9.55	13.46	0.80	0.40	0.47	0.30	2215.40	1116.05	361.17	28.06	25.90	5.22
PRETAX_PM	185.72	5.64	264.04	0.55	0.29	0.73	617.90	705.12	302.92	74.26	13.38	47.89
ACCtTA	0.17	0.16	0.18	0.14	0.14	0.13	22.92	28.72	18.41	2.22	2.09	2.31
CH_CF	2.43	1.98	2.81	0.97	0.94	0.99	344.09	110.15	357.91	5.65	4.53	6.51
CH_ARtSALES	8.55	11.87	1.40	1.57	2.09	0.64	637.40	333.64	37.28	39.19	22.63	8.22
CH_ASSTURN	1.30	0.59	1.74	0.32	0.30	0.33	304.23	99.91	184.59	5.81	5.28	6.08
CH_CURRENT	1.07	0.81	1.31	0.35	0.33	0.38	328.20	302.15	265.28	4.64	4.54	4.39
CH_QUICK	1.45	0.56	2.05	0.41	0.36	0.45	396.25	35.03	213.33	4.38	2.78	4.40
CH_INVTURN	287.96	331.14	230.30	29.18	37.54	15.30	295.40	234.85	398.54	50.02	33.31	19.37
INVtTA	0.14	0.15	0.13	0.14	0.15	0.13	0.56	0.52	0.20	0.46	0.44	0.09
CH_INVtTA	0.04	0.04	0.04	0.04	0.04	0.03	18.89	5.35	29.64	2.96	2.77	2.79
CH_INV	42.17	57.86	5.64	0.96	1.11	0.75	994.47	530.23	162.76	31.55	28.70	19.23
CH_SALES	7.07	0.88	10.00	0.56	0.37	0.69	1082.52	92.34	542.44	45.84	5.33	36.52
CH_DEP	119.32	49.03	162.83	2.16	1.18	2.83	949.20	308.13	554.16	87.93	22.71	57.68
CH_DPS	0.91	0.70	1.07	0.52	0.52	0.53	116.15	30.58	111.84	2.69	2.16	3.22
CH_ROE	10.14	14.25	1.13	0.49	0.60	0.34	1946.31	988.67	176.74	30.03	24.37	9.65
CAPGEAR	0.20	0.20	0.21	0.20	0.19	0.20	2.10	2.80	1.43	0.60	0.64	0.55
CH_CAPGEAR	16.45	3.09	23.22	1.87	1.38	2.26	401.22	49.75	202.27	30.97	7.97	27.20
ROA	0.16	0.16	0.16	0.09	0.09	0.09	76.01	95.56	56.82	3.30	3.44	3.14
GM	0.29	0.33	0.25	0.23	0.21	0.25	183.58	230.49	2.17	2.01	2.39	1.64
CH_EBTtSALES	144.25	10.52	204.77	3.65	2.02	4.75	1251.62	477.61	620.16	70.98	20.77	47.77
SALEStCASH	1309.38	1772.81	484.61	126.38	169.74	48.78	531.52	307.42	165.58	74.96	42.07	25.08
LN_SALEStCASH	1.54	1.58	1.48	1.45	1.48	1.41	3.41	3.40	3.12	1.31	1.17	1.32
CH_TA	1.24	1.56	0.79	0.36	0.37	0.36	226.93	173.45	69.94	5.32	5.12	5.53
CASHtDEBT	53.33	46.57	59.64	8.61	9.48	7.57	286.89	125.55	327.10	27.13	29.28	16.39
WCtTA	0.25	0.26	0.23	0.25	0.26	0.23	-0.95	-0.86	-0.90	-0.95	-0.86	-0.90
OPINCtTA	0.13	0.11	0.15	0.10	0.09	0.10	26.56	8.44	30.98	1.51	1.36	1.59
DIVtCF	167.79	242.20	13.69	10.14	14.08	3.87	1489.49	714.77	219.61	57.50	30.88	11.35
DY	0.04	0.04	0.04	0.03	0.03	0.03	84.70	152.52	32.29	1.86	1.50	2.17
CH_INVtSALES	42.73	58.40	8.48	0.89	0.97	0.80	959.38	520.73	297.83	33.93	30.51	37.86
CH_ARtSALES	5.62	2.12	7.73	0.85	0.58	1.06	679.39	254.00	383.36	34.95	10.16	27.65
CH_SALESIGM	12.25	3.04	17.02	1.02	0.99	1.06	737.99	243.34	391.97	8.24	7.23	8.85
CH_SAtSALES	1.84	1.92	1.77	0.60	0.58	0.62	95.99	104.60	84.38	7.50	6.72	8.00
LABOUR	0.36	0.39	0.31	0.25	0.26	0.24	18.05	16.80	16.59	2.92	2.58	3.22
NTC	320.49	193.30	413.83	79.76	74.58	84.76	768.54	99.48	561.16	5.22	3.10	6.49
GFORECAST_12	6.39	8.61	3.08	3.35	3.93	2.67	234.39	144.55	9.71	6.07	4.94	2.82
REVISION_12	1.60	1.78	1.40	0.40	0.42	0.39	993.84	1064.83	631.87	6.03	6.36	5.60
REVISION_24	0.90	0.96	0.83	0.34	0.35	0.33	175.92	84.45	324.01	3.25	3.18	3.19
REVISION_36	5.15	0.86	7.05	0.59	0.46	0.68	3112.04	498.54	1685.54	25.26	2.04	25.65
RSTRENGTH_ALSI	0.29	0.29	0.28	0.29	0.29	0.28	-1.20	-1.22	-1.18	-1.20	-1.22	-1.18
RSTRENGTH_SUB	0.29	0.29	0.28	0.29	0.29	0.28	-1.20	-1.23	-1.17	-1.20	-1.23	-1.17
CH_RSTRENGTH_ALSI	0.40	0.41	0.39	0.40	0.41	0.39	-0.24	-0.24	-0.23	-0.24	-0.24	-0.23
CH_RSTRENGTH_SUB	0.40	0.41	0.40	0.40	0.41	0.40	-0.26	-0.27	-0.24	-0.26	-0.27	-0.24
WRSTRENGTH_ALSI	0.29	0.29	0.28	0.29	0.29	0.28	-1.19	-1.23	-1.16	-1.19	-1.23	-1.16
WRSTRENGTH_SUB	0.29	0.30	0.28	0.29	0.30	0.28	-1.20	-1.24	-1.16	-1.20	-1.24	-1.16
POS_SALES	11.11	11.03	11.19	11.06	10.99	11.14	0.86	0.89	0.84	0.77	0.81	0.73
POS_PRETAX	11.54	11.25	11.83	11.52	11.22	11.82	0.56	0.83	0.32	0.53	0.77	0.31
POS_OP	11.51	10.92	12.09	11.48	10.87	12.09	0.60	0.81	0.40	0.56	0.71	0.40
POS_NET	11.54	11.14	11.93	11.52	11.10	11.92	0.55	0.80	0.35	0.52	0.73	0.35
POS_ROE	11.49	11.27	11.71	11.47	11.22	11.70	0.65	0.91	0.43	0.60	0.81	0.42

Appendix B.1. Descriptive Statistics

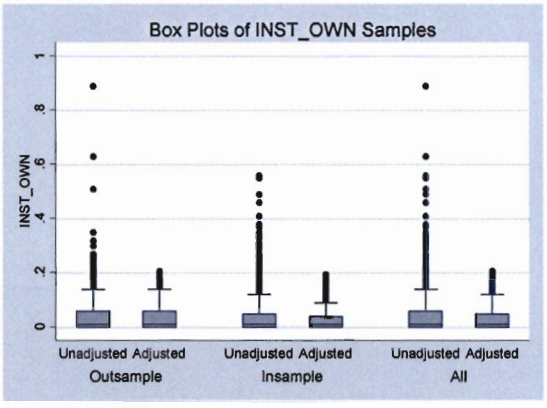
Continued.

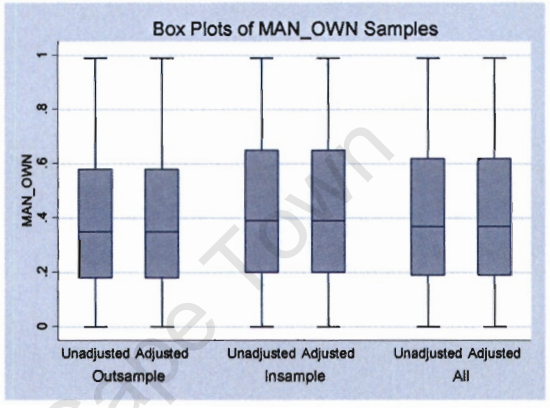
	Skewness					
	Before Adjustment			After Adjustment		
	All	Insample	Outsample	All	Insample	Outsample
INST_OWN	4.39	3.94	4.94	1.74	1.90	1.61
MAN_OWN	0.32	0.24	0.38	0.32	0.24	0.38
PE	58.63	46.97	36.27	4.62	4.58	2.77
EY	-9.78	-9.45	-9.63	0.20	-0.15	0.60
MV	7.06	7.29	4.22	2.78	2.95	2.61
LN_MV	0.07	0.21	-0.06	0.08	0.21	-0.06
BETA	0.59	0.73	0.46	0.54	0.66	0.44
MTB	34.13	25.23	13.32	2.00	2.10	1.85
VOL_3	86.89	37.13	81.17	5.28	4.73	5.56
LN_VOL_3	-0.34	-0.31	-0.37	-0.28	-0.24	-0.32
VOL_6	60.59	46.53	24.35	4.68	4.79	3.30
LN_VOL_6	-0.50	-0.49	-0.52	-0.41	-0.40	-0.43
VOL_12	78.34	58.67	19.87	4.54	4.63	3.07
LN_VOL_12	-0.57	-0.53	-0.61	-0.48	-0.45	-0.51
VOL_18	98.41	73.89	20.65	4.12	4.31	3.05
LN_VOL_18	-0.61	-0.58	-0.63	-0.52	-0.49	-0.55
VOL_24	94.42	71.19	23.48	3.76	3.98	3.10
LN_VOL_24	-0.63	-0.60	-0.67	-0.54	-0.52	-0.56
SDEV_VOL	65.80	58.93	60.20	4.98	5.00	4.62
LN_SDEV_VOL	-0.74	-0.23	-1.26	-0.25	-0.23	-0.29
VOLtNOSHARES	110.17	31.23	84.03	5.49	4.58	5.47
LN_VOLtNOSHARES	-0.42	-0.38	-0.46	-0.41	-0.37	-0.44
AGE	1.22	1.22	1.23	1.22	1.22	1.23
MOM_1	3.27	4.16	1.77	0.23	0.24	0.21
MOM_3	4.43	4.18	4.71	0.42	0.45	0.38
MOM_6	5.51	5.46	5.45	0.73	0.79	0.63
MOM_12	5.63	6.27	4.20	1.02	1.08	0.90
MOM_18	5.80	5.59	5.99	1.37	1.45	1.17
MOM_24	7.05	6.54	7.69	1.62	1.67	1.48
NOSHARES	5.78	7.22	4.63	2.36	2.50	2.06
LN_NOSHARES	-0.09	-0.03	-0.18	-0.05	-0.01	-0.13
MAXP_12	-0.24	-0.10	-0.41	-0.57	-0.56	-0.58
MAXP_24	-0.30	-0.23	-0.38	-0.45	-0.42	-0.47
MAXP_60	-0.09	0.01	-0.18	-0.16	-0.08	-0.23
EARN	5.74	6.87	4.80	2.41	2.48	2.33
EARNG_3	-1.52	-2.27	4.52	-0.25	-0.61	0.26
EARNG_6	2.22	0.70	3.78	-0.32	-0.03	-0.45
EARNG_12	4.87	5.98	3.59	0.02	0.21	-0.09
EARNG_24	7.30	7.52	7.02	0.75	0.57	0.85
EARNG_60	19.03	7.92	19.95	2.72	1.61	2.66
EPS	8.41	8.31	3.51	2.39	2.42	2.34
LN_EPS	0.01	0.00	0.01	0.00	0.00	0.02
ROE	-46.84	-33.32	16.66	1.73	1.94	0.12
PRETAX_PM	24.57	26.49	17.23	-1.69	-1.59	-1.42
ACCtTA	-0.24	2.16	-2.14	0.04	-0.11	0.23
CH_CF	15.22	7.96	16.92	0.38	0.47	0.32
CH_ARtSALES	8.87	6.47	-1.98	0.67	0.53	0.21
CH_ASSTURN	16.37	7.98	13.24	1.43	1.52	1.35
CH_CURRENT	16.28	15.40	14.99	1.42	1.30	1.46
CH_QUICK	18.37	4.57	13.98	1.44	1.04	1.58
CH_INVTURN	-4.28	-11.24	19.60	1.19	0.99	1.24
INVtTA	1.01	0.97	0.97	0.99	0.95	0.95
CH_INVtTA	-1.64	0.10	-3.15	-0.01	-0.03	0.03
CH_INV	31.42	23.05	12.39	5.01	5.00	3.82
CH_SALES	31.96	8.54	22.72	5.43	1.79	5.31
CH_DEP	29.99	17.43	23.55	8.65	4.44	7.38
CH_DPS	8.04	3.72	8.62	0.60	0.51	0.69
CH_ROE	-43.84	-31.36	0.75	-1.17	-1.14	-0.36
CAPGEAR	1.27	1.34	1.20	1.01	0.97	1.04
CH_CAPGEAR	19.34	6.30	13.87	4.93	2.81	4.94
ROA	-0.13	2.22	-2.54	-0.33	-0.50	-0.18
GM	-7.47	-10.81	0.51	0.89	1.17	0.70
CH_EBTtSALES	35.27	20.65	24.88	-2.19	0.71	-1.91
SALEStCASH	20.86	16.22	12.62	8.15	6.31	4.78
LN_SALEStCASH	0.82	1.15	0.38	0.48	0.66	0.23
CH_TA	13.42	12.40	7.22	1.80	1.80	1.80
CASHtDEBT	13.24	5.73	16.58	1.74	2.16	0.74
WCtTA	-0.27	-0.47	-0.07	-0.27	-0.47	-0.07
OPINCtTA	0.38	0.41	0.40	-0.02	0.04	-0.05
DIVtCF	-38.26	-26.56	-11.41	-0.41	-0.29	-0.97
DY	5.36	7.01	3.99	1.41	1.28	1.53
CH_INVtSALES	30.64	22.84	-13.20	3.21	2.29	4.91
CH_ARtSALES	-22.96	14.20	-18.27	1.30	1.11	1.13
CH_SALESIGM	-26.78	-13.78	-19.77	-0.98	-0.71	-1.17
CH_SAtSALES	8.69	9.57	7.67	1.07	1.11	1.03
LABOUR	-2.96	-3.27	-1.99	-0.33	-0.65	0.15
NTC	24.94	8.33	22.86	1.83	1.21	2.27
GFORECAST_12	11.14	9.19	2.55	2.32	2.25	1.77
REVISION_12	-18.09	-17.26	-18.67	0.00	0.37	-0.41
REVISION_24	4.18	8.04	-1.68	0.53	0.91	0.07
REVISION_36	48.08	16.10	35.60	1.74	0.87	1.81
RSTRENGTH_ALSI	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
RSTRENGTH_SUB	0.00	-0.01	0.01	0.00	-0.01	0.01
CH_RSTRENGTH_ALSI	0.07	0.07	0.07	0.07	0.07	0.07
CH_RSTRENGTH_SUB	0.09	0.09	0.08	0.09	0.09	0.08
WRSTRENGTH_ALSI	-0.01	-0.01	-0.02	-0.01	-0.01	-0.02
WRSTRENGTH_SUB	0.00	-0.01	0.01	0.00	-0.01	0.01
POS_SALES	1.26	1.29	1.23	1.24	1.28	1.21
POS_PRETAX	1.17	1.24	1.11	1.16	1.22	1.11
POS_OP	1.18	1.20	1.16	1.17	1.18	1.16
POS_NET	1.17	1.22	1.14	1.16	1.20	1.14
POS_ROE	1.21	1.30	1.12	1.20	1.28	1.12

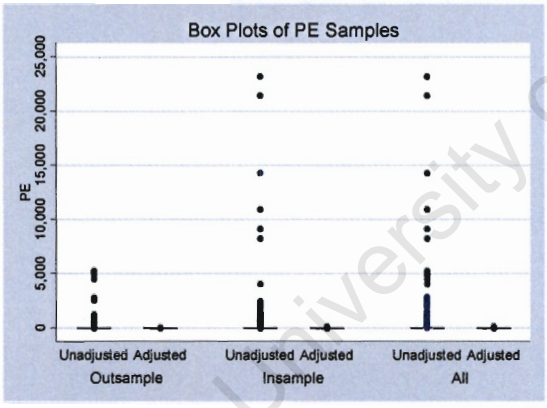
Appendix B.2. Box and Whisker Plots

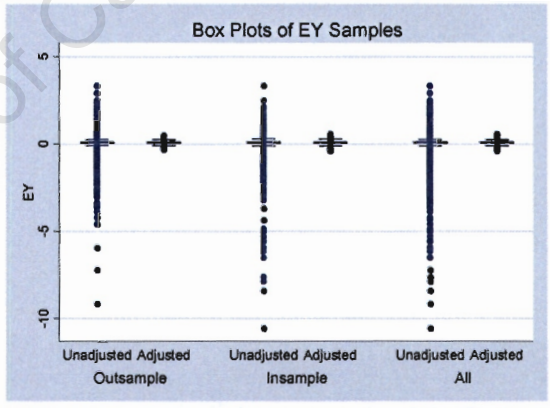
This appendix shows box-and-whisker plots for each variable included in the study, providing a graphical method for inspecting the distribution of each variable. Plots are provided for each variable both before and after adjustment for outliers through winsorisation and dropping of outliers so the effect of the process is graphically evident. In addition, plots are provided for the entire sample, as well as the in- and out-of-sample groups of stocks so that the similarity or differences between these samples can be distinguished.

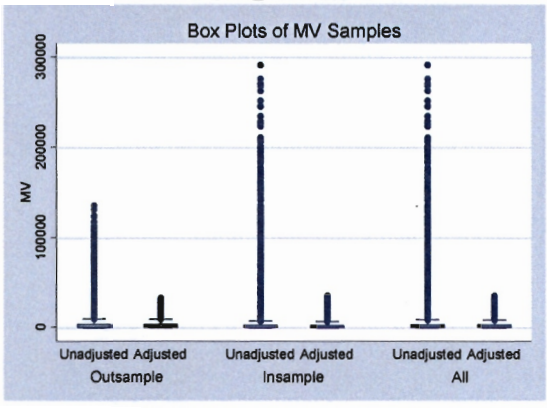
The top and bottom sides of each box represents the 25th and 75th percentiles of each variable respectively. The dividing line inside the box represents the median value. The whiskers represent the adjacent values. The solid circles represent outliers. The vast reduction in outliers in most variables achieved by the adjustment process is noticeable.

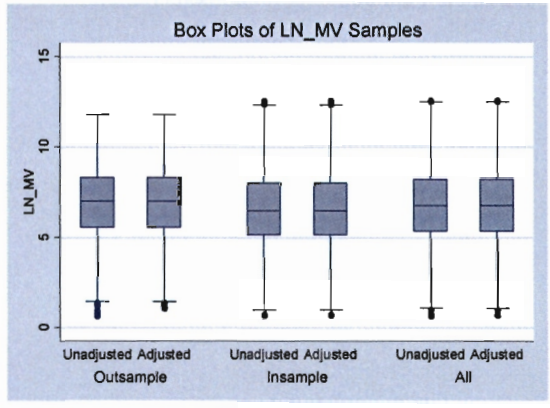






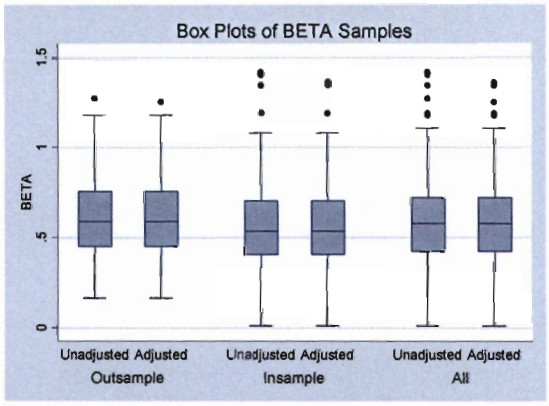


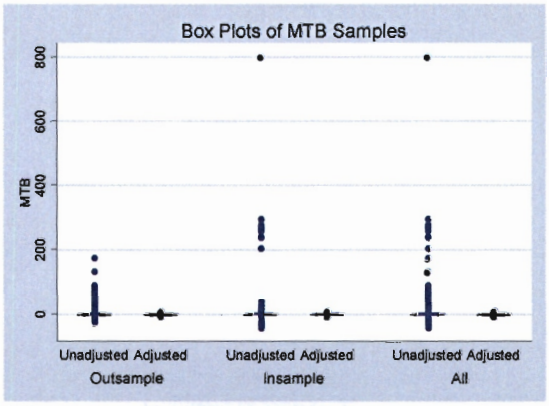


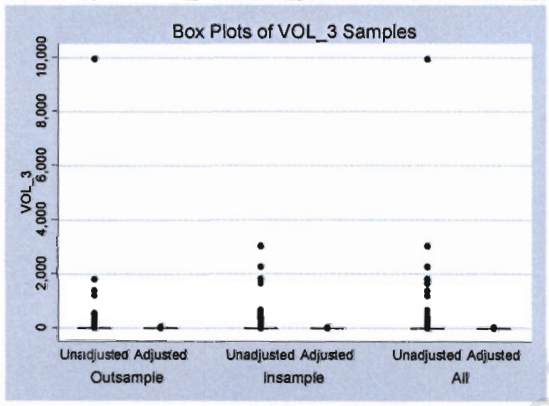


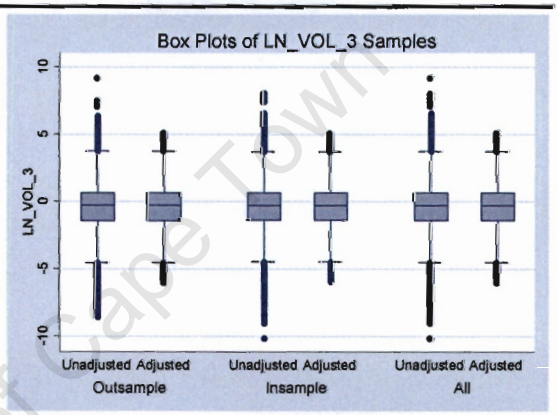
Appendix B.2. Box and Whisker Plots

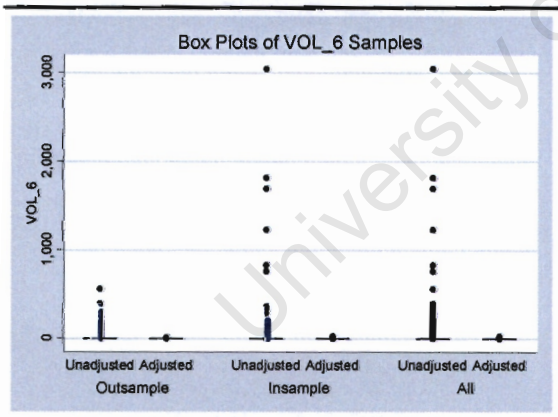
Continued.

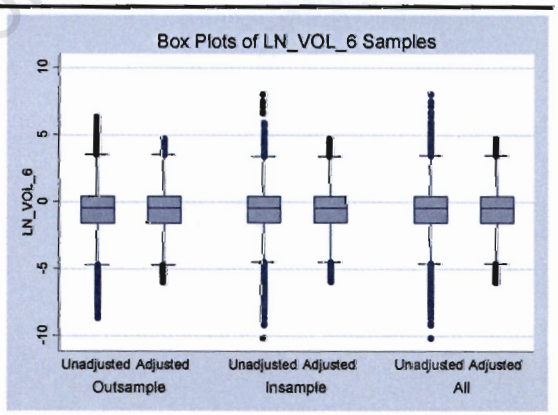


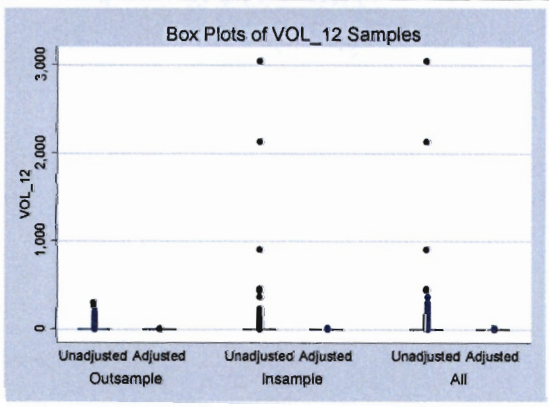


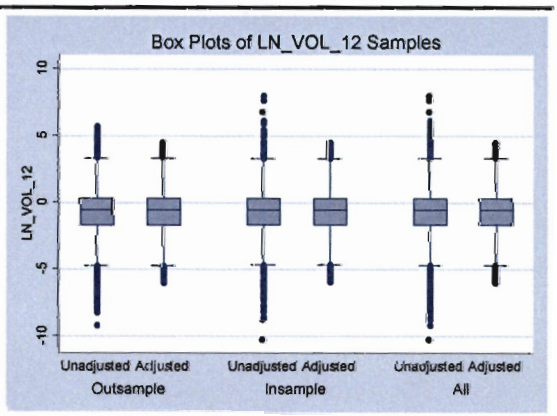






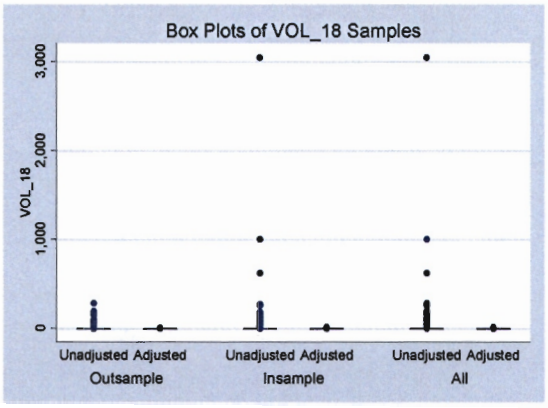


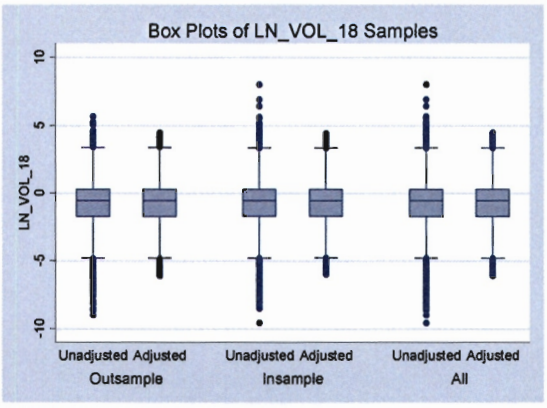


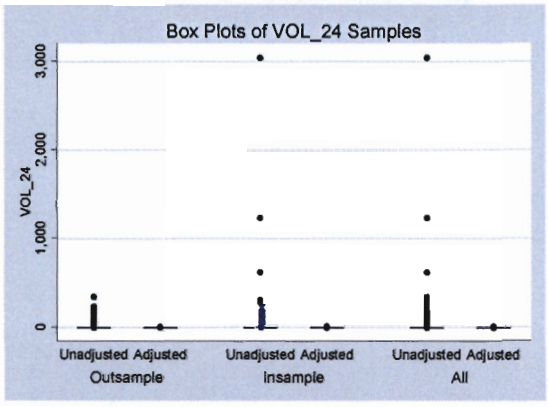


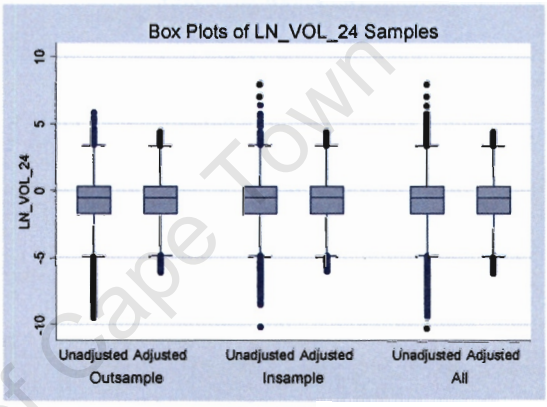
Appendix B.2. Box and Whisker Plots

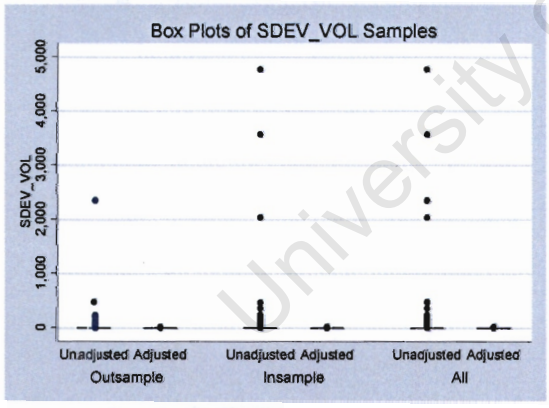
Continued.

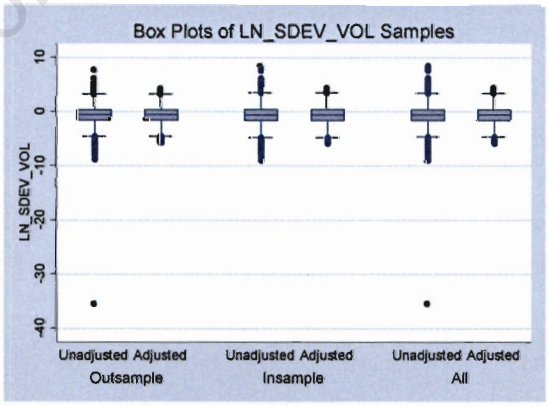


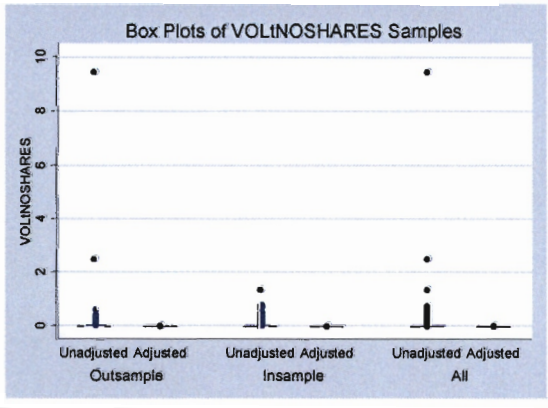


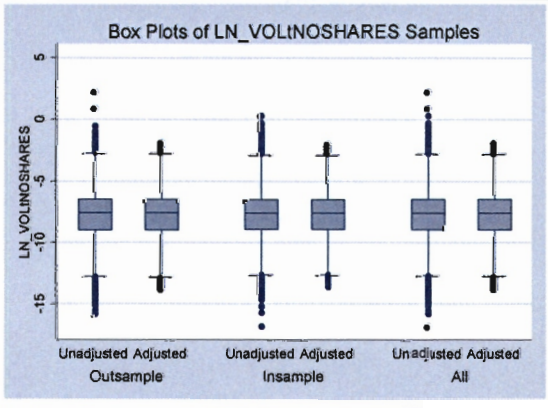












Appendix B.2. Box and Whisker Plots

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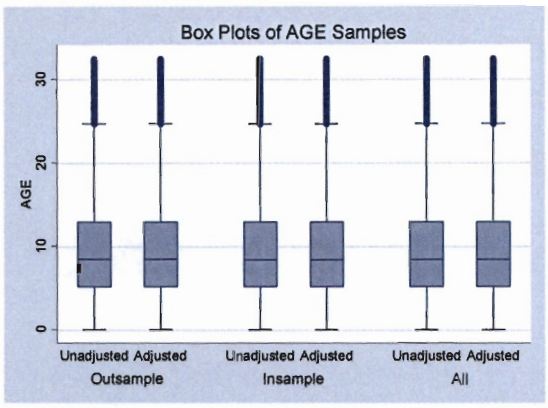

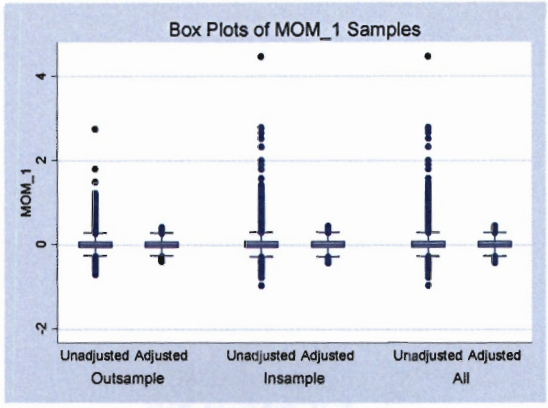

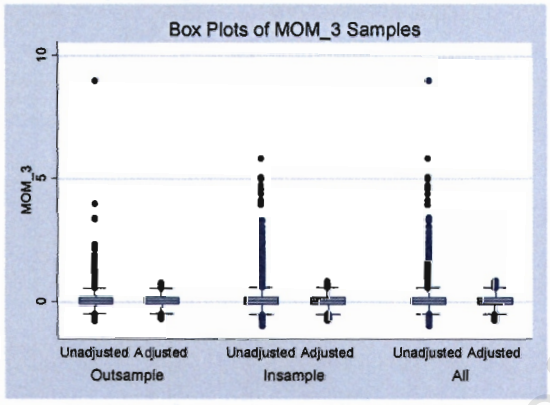

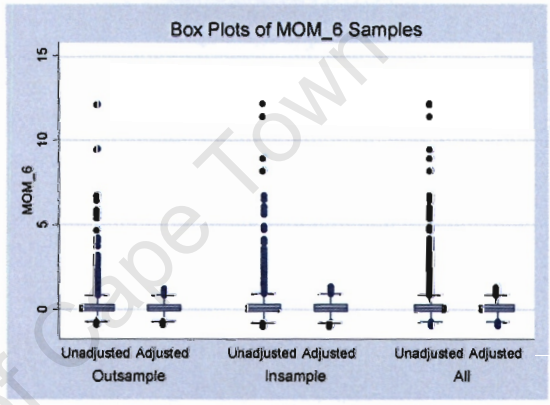

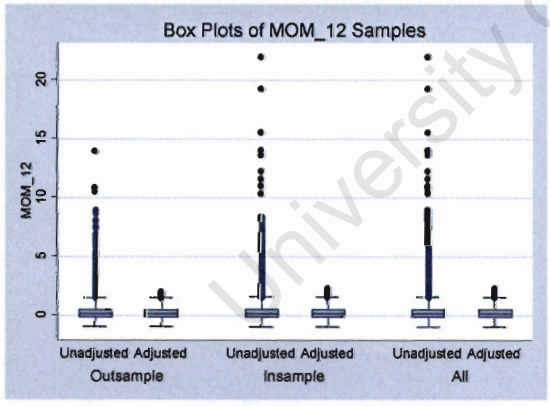

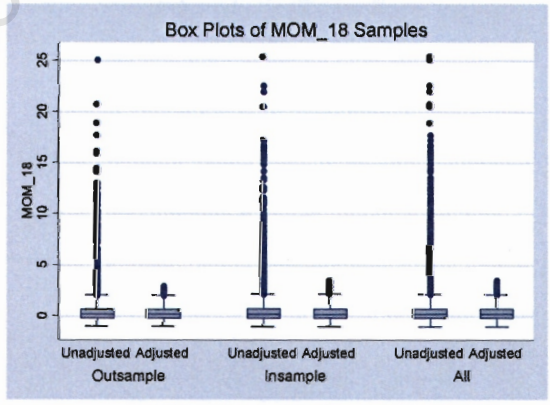

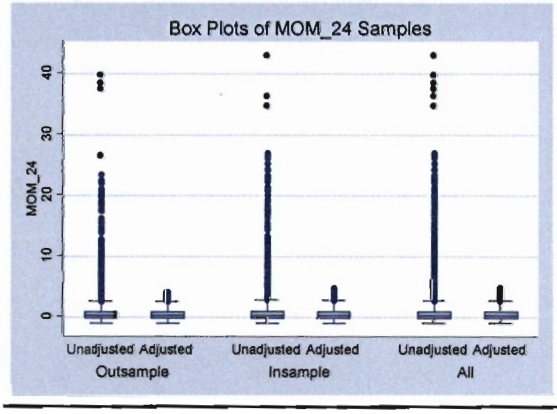

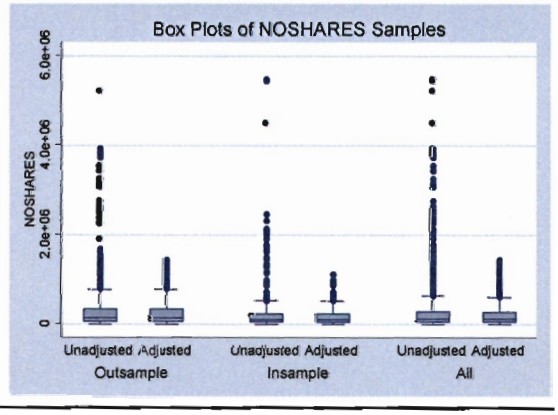

Appendix B.2. Box and Whisker Plots

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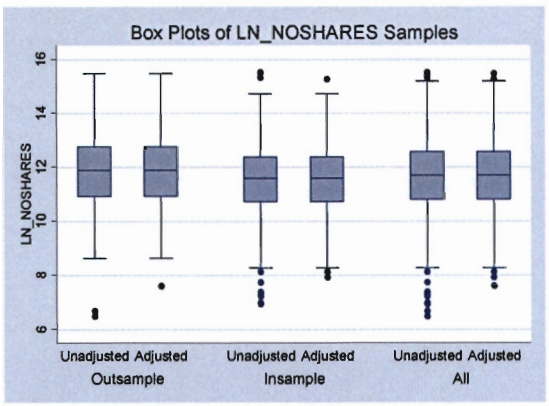
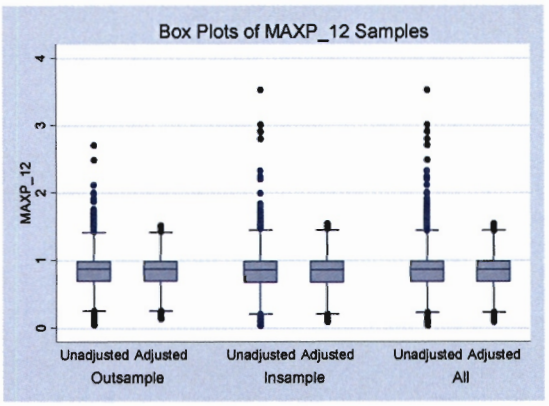
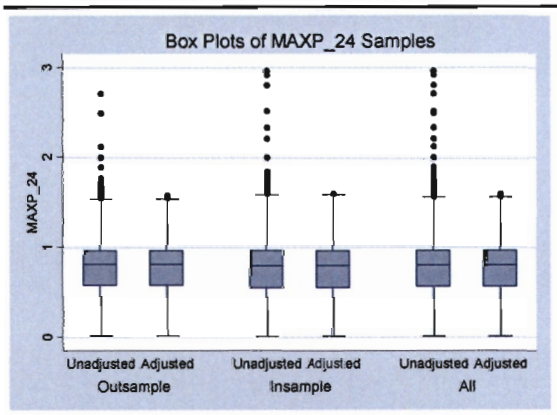
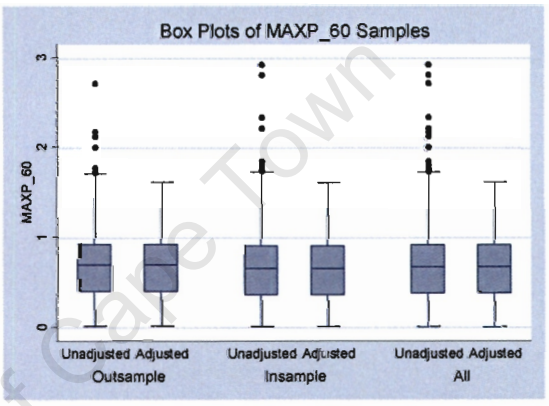
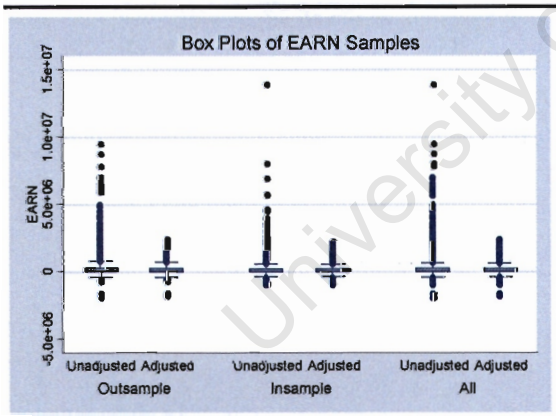
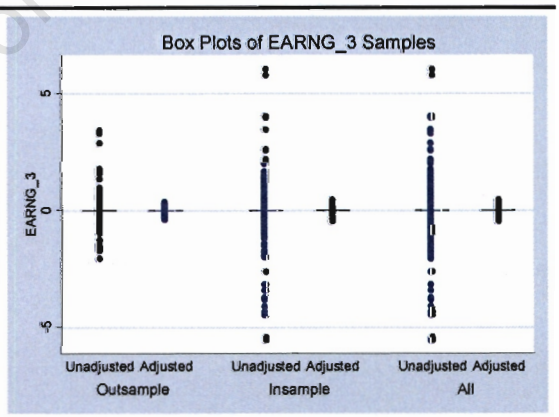


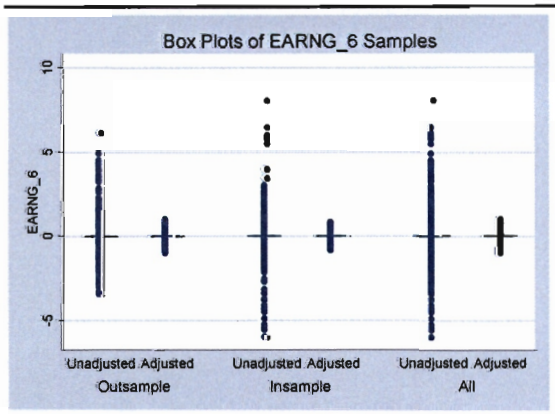


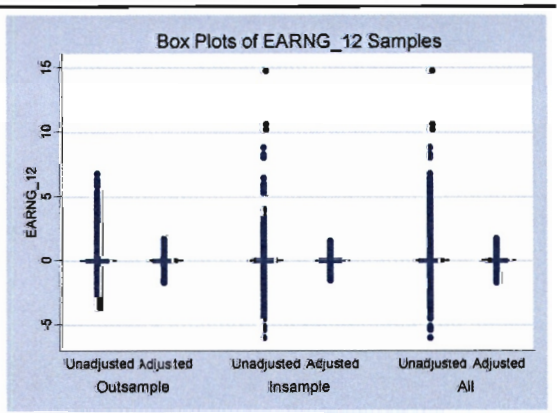






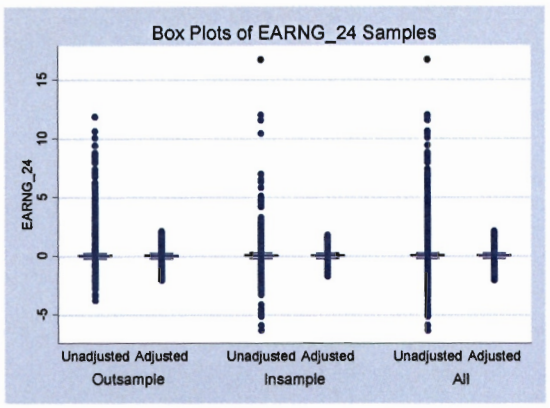


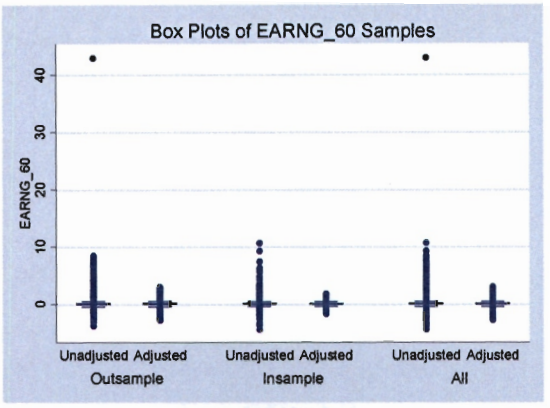


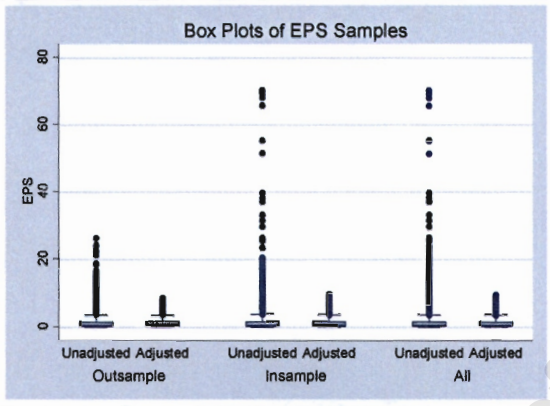


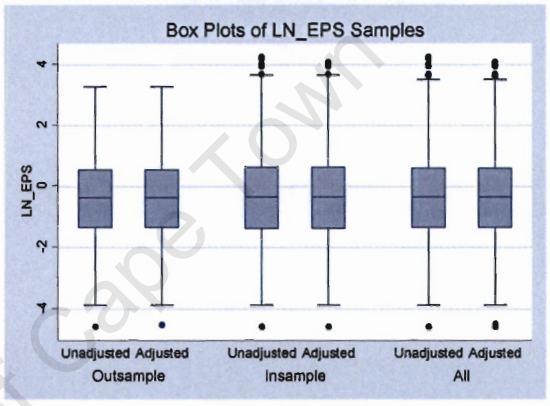
Appendix B.2. Box and Whisker Plots

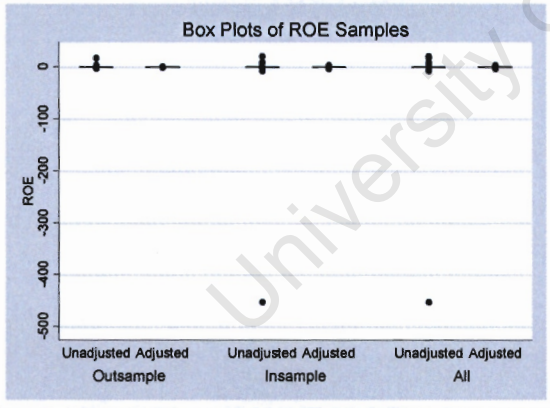
Continued.

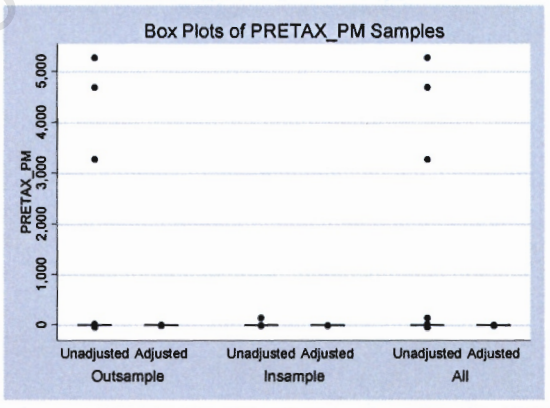


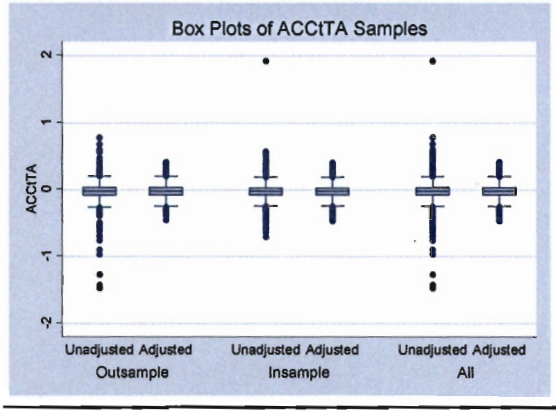


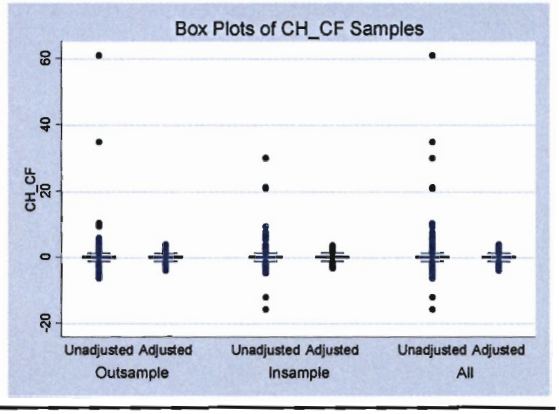






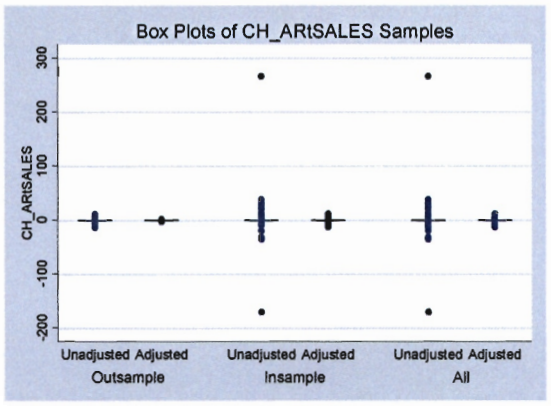


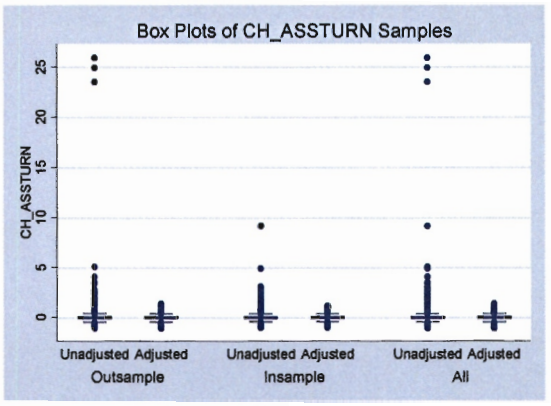


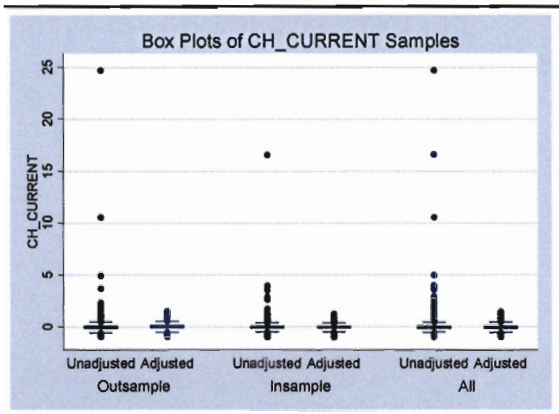


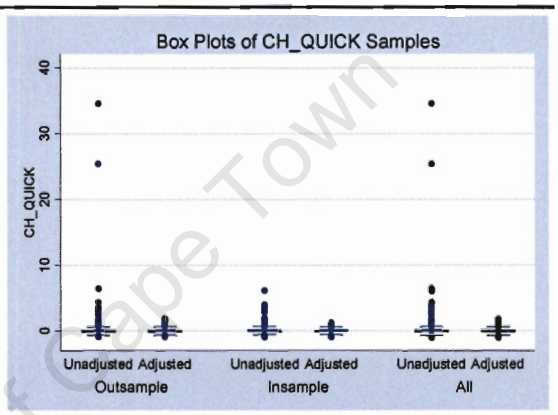
Appendix B.2. Box and Whisker Plots

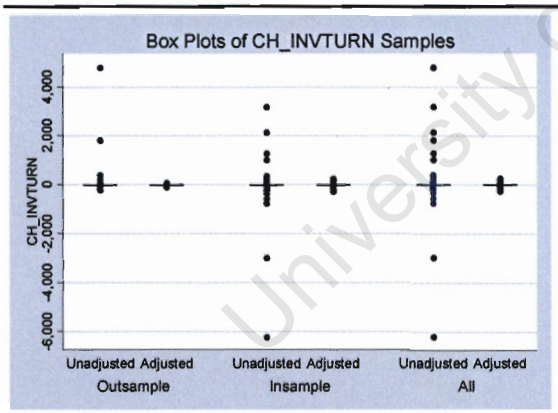
Continued.

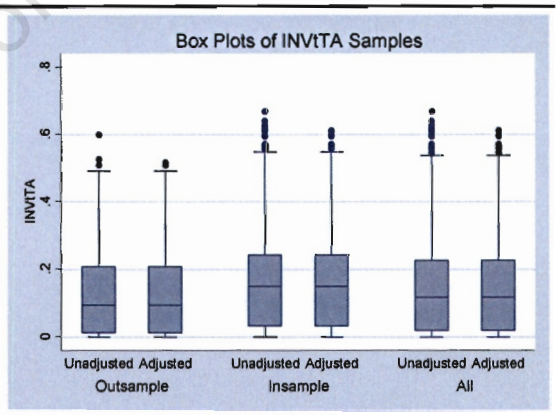


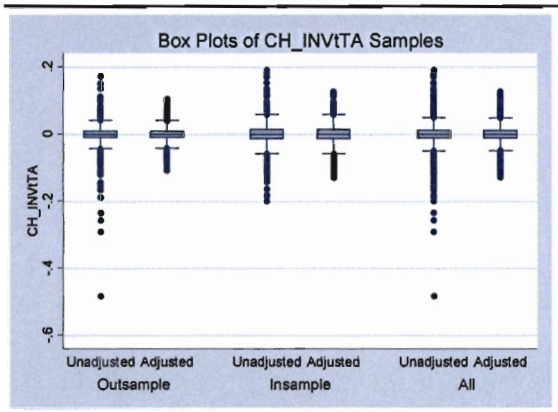


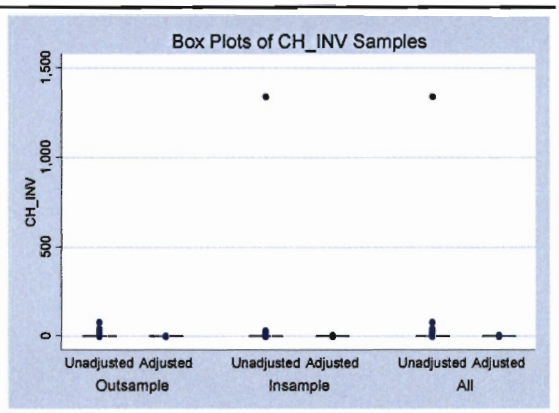






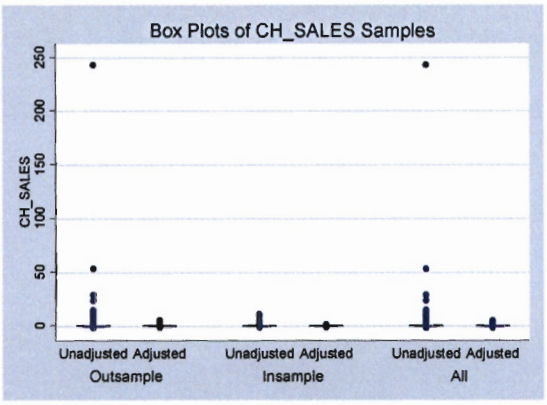


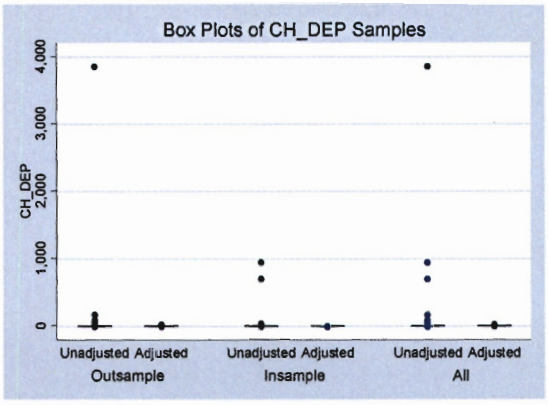


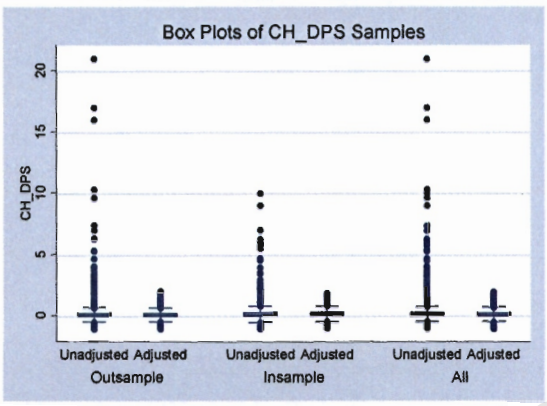


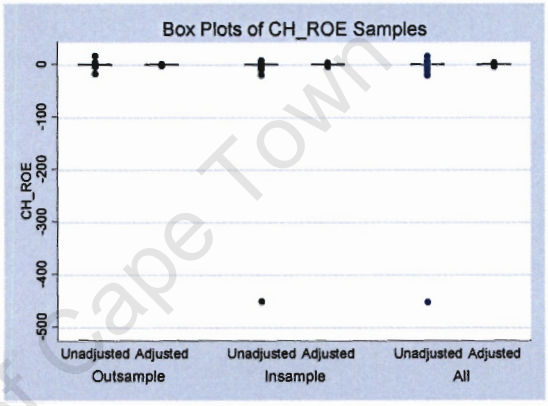
Appendix B.2. Box and Whisker Plots

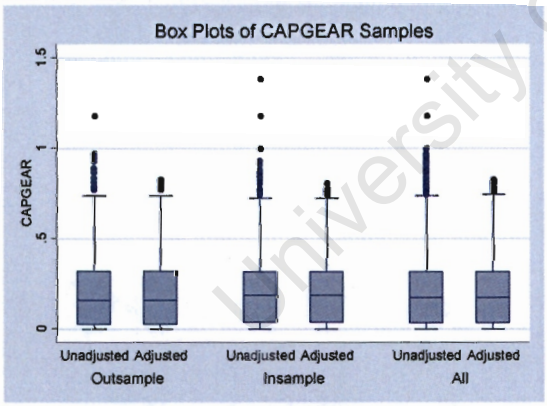
Continued.

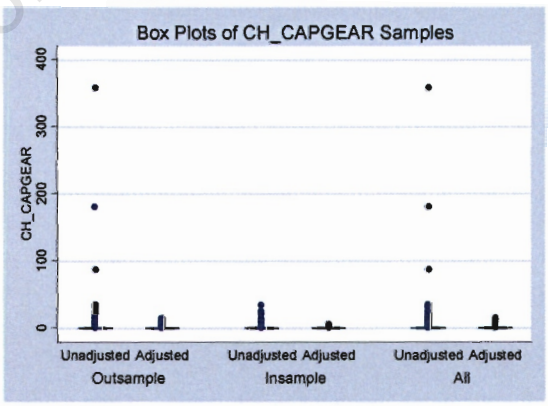


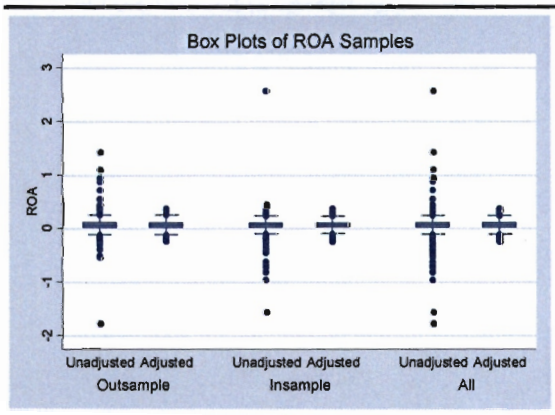


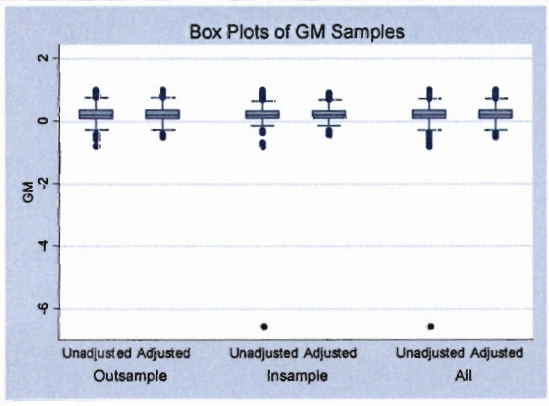












Appendix B.2. Box and Whisker Plots

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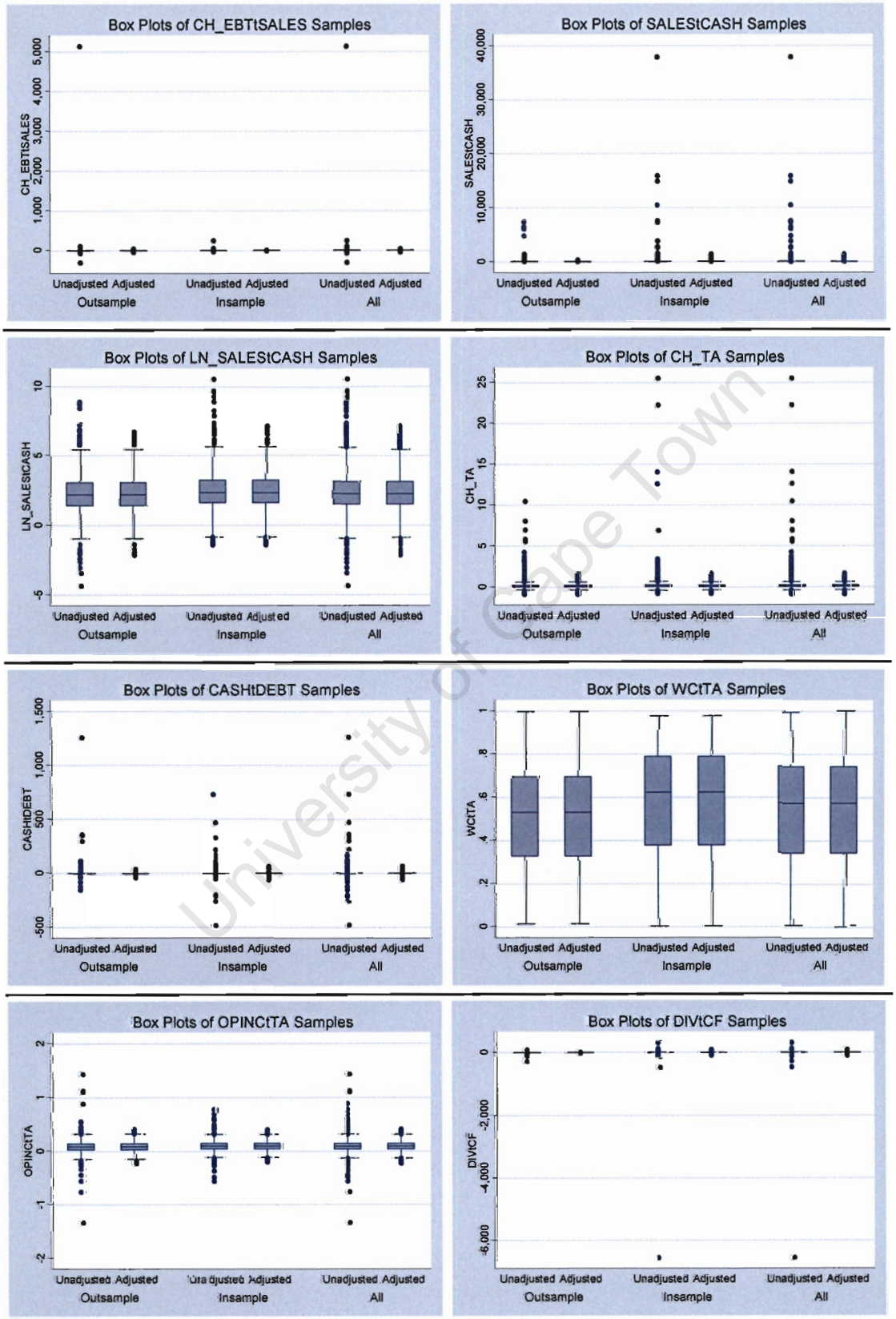

Appendix B.2. Box and Whisker Plots

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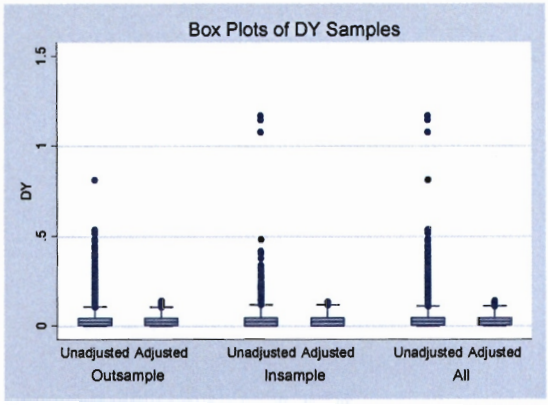
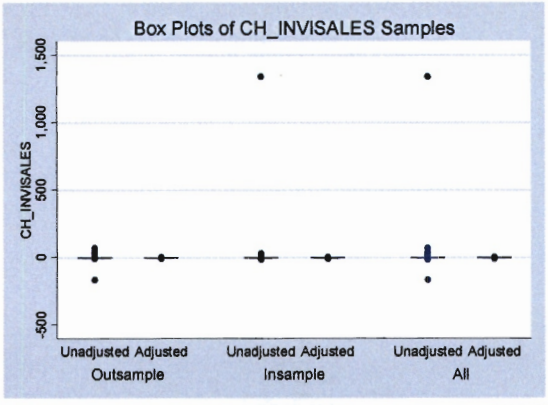
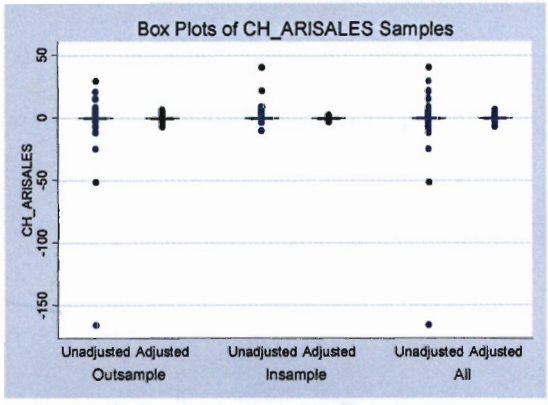
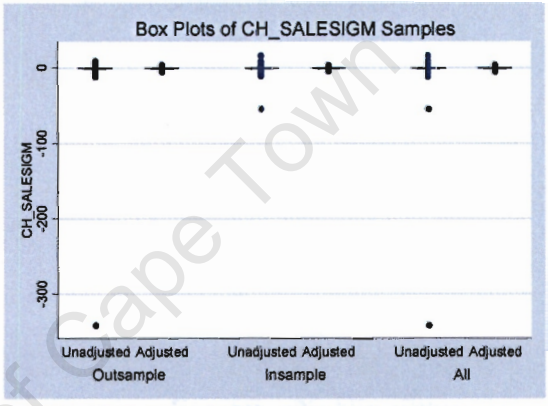
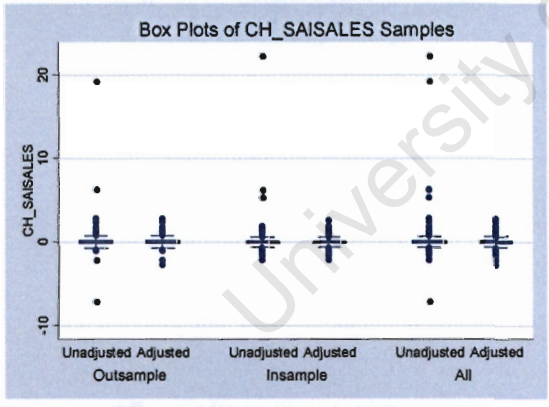
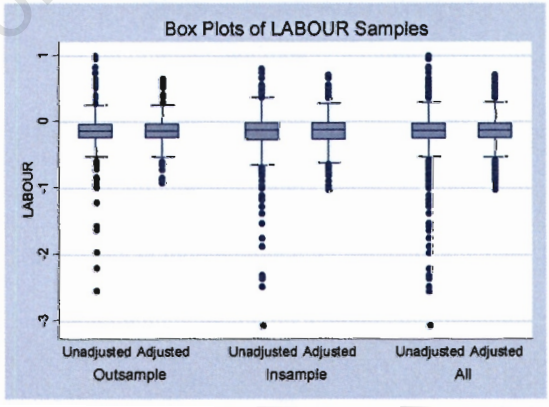


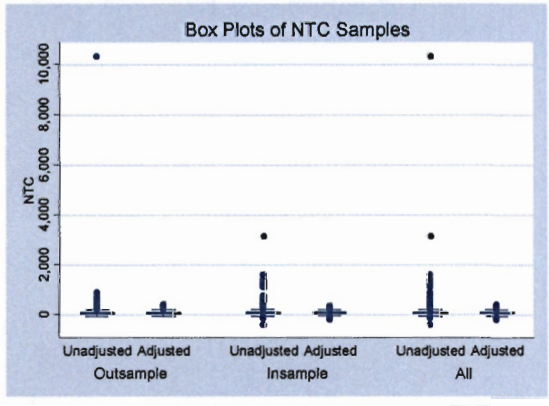


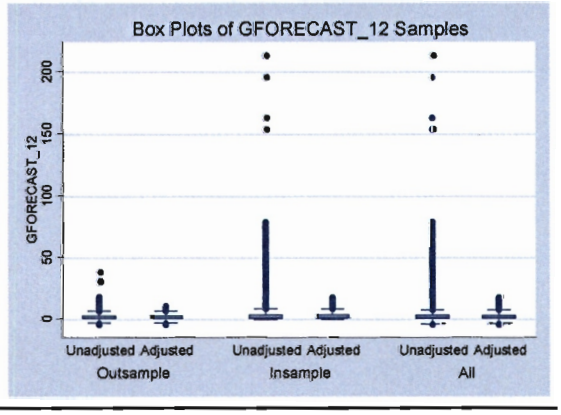






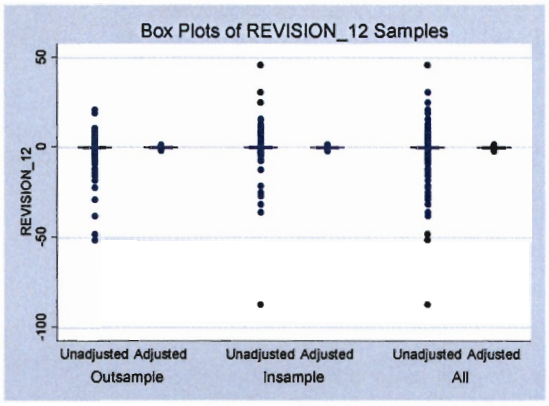


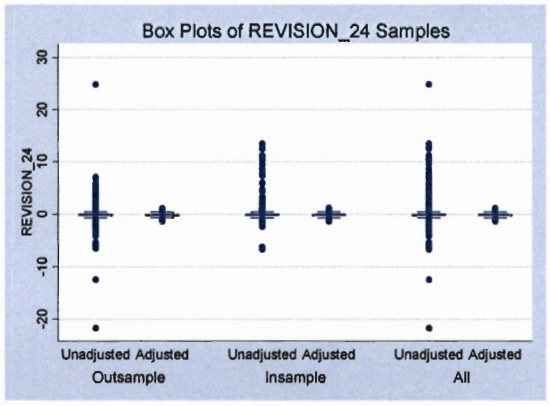


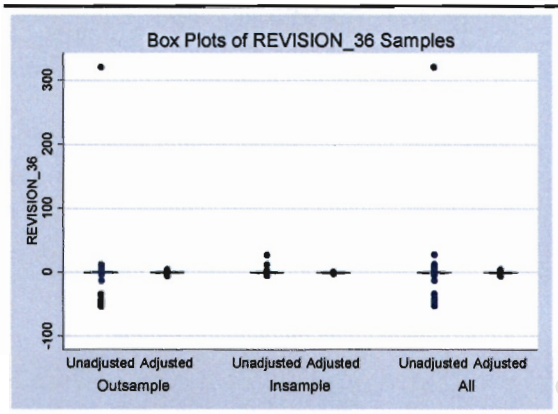


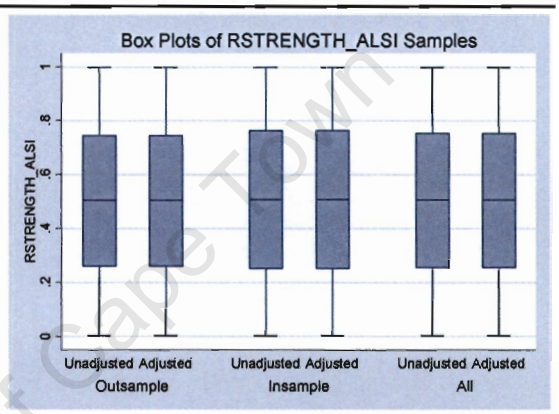
Appendix B.2. Box and Whisker Plots

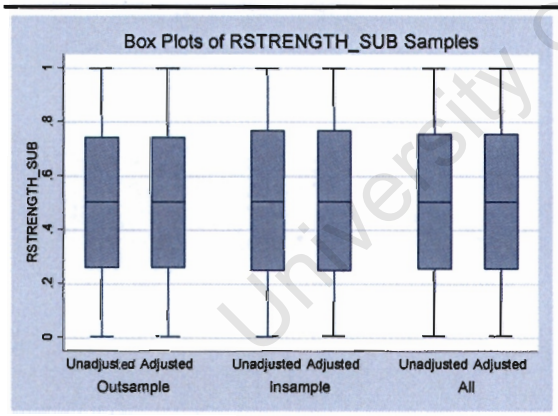
Continued.

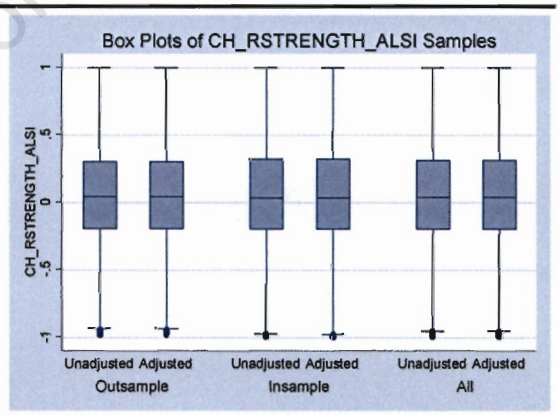


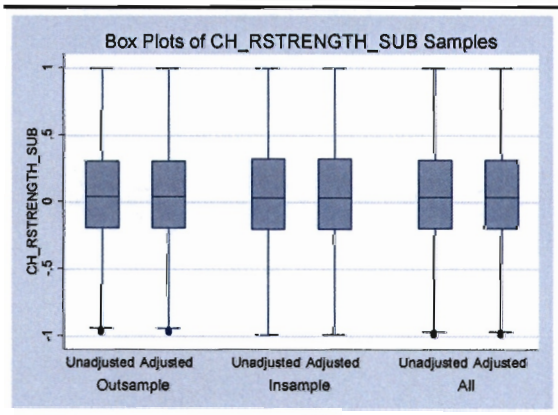


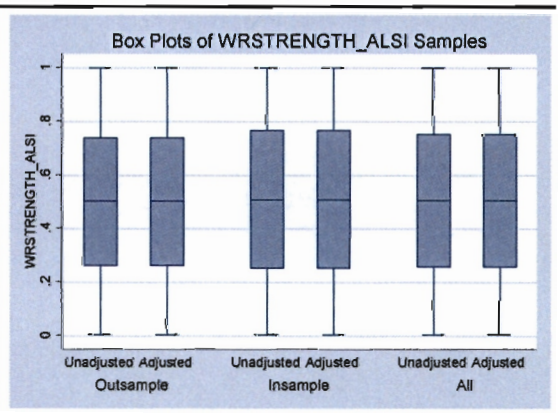






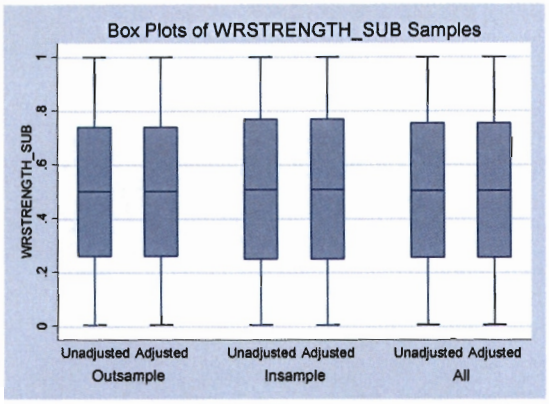


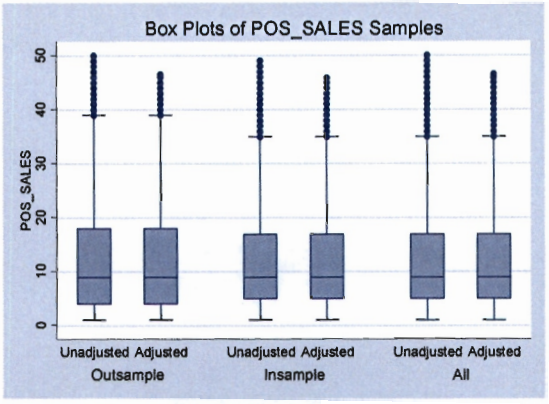


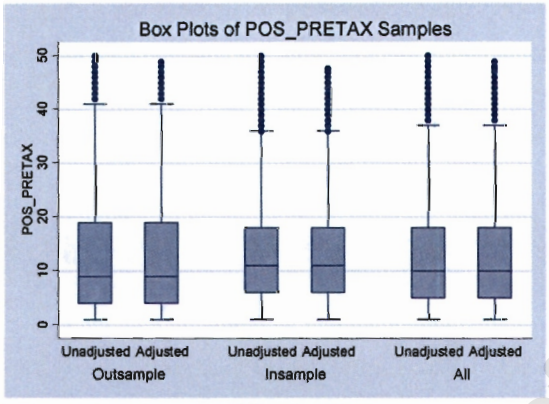


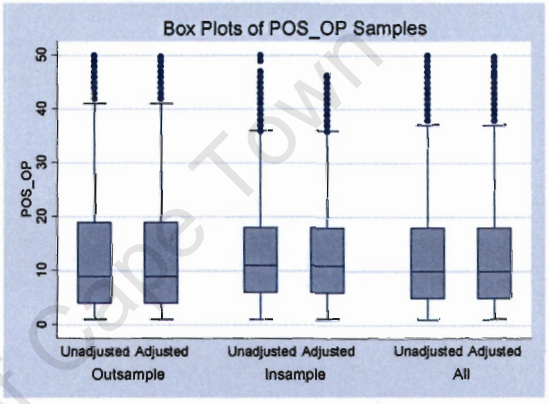
Appendix B.2. Box and Whisker Plots

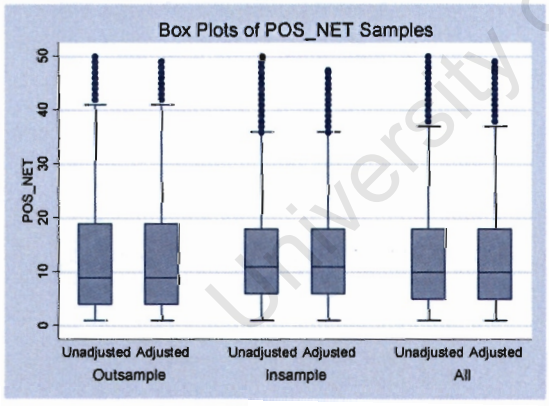
Continued.

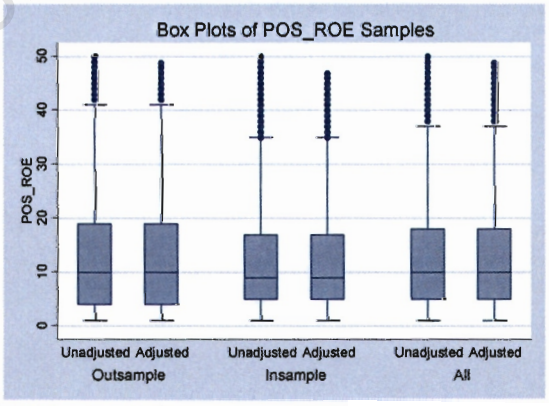








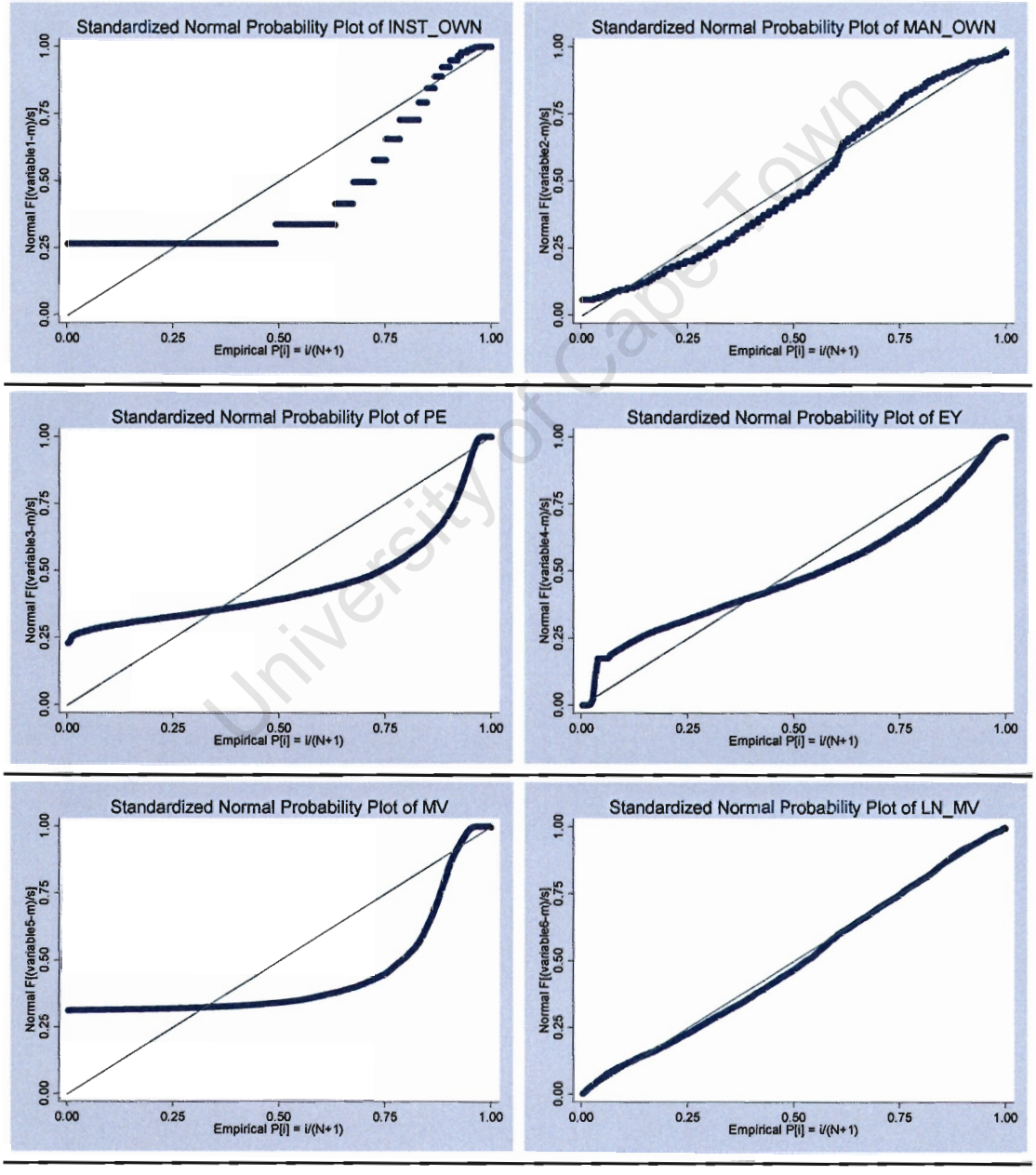




Appendix B.3. Standardized Normal Probability Plots (P-P Plots)

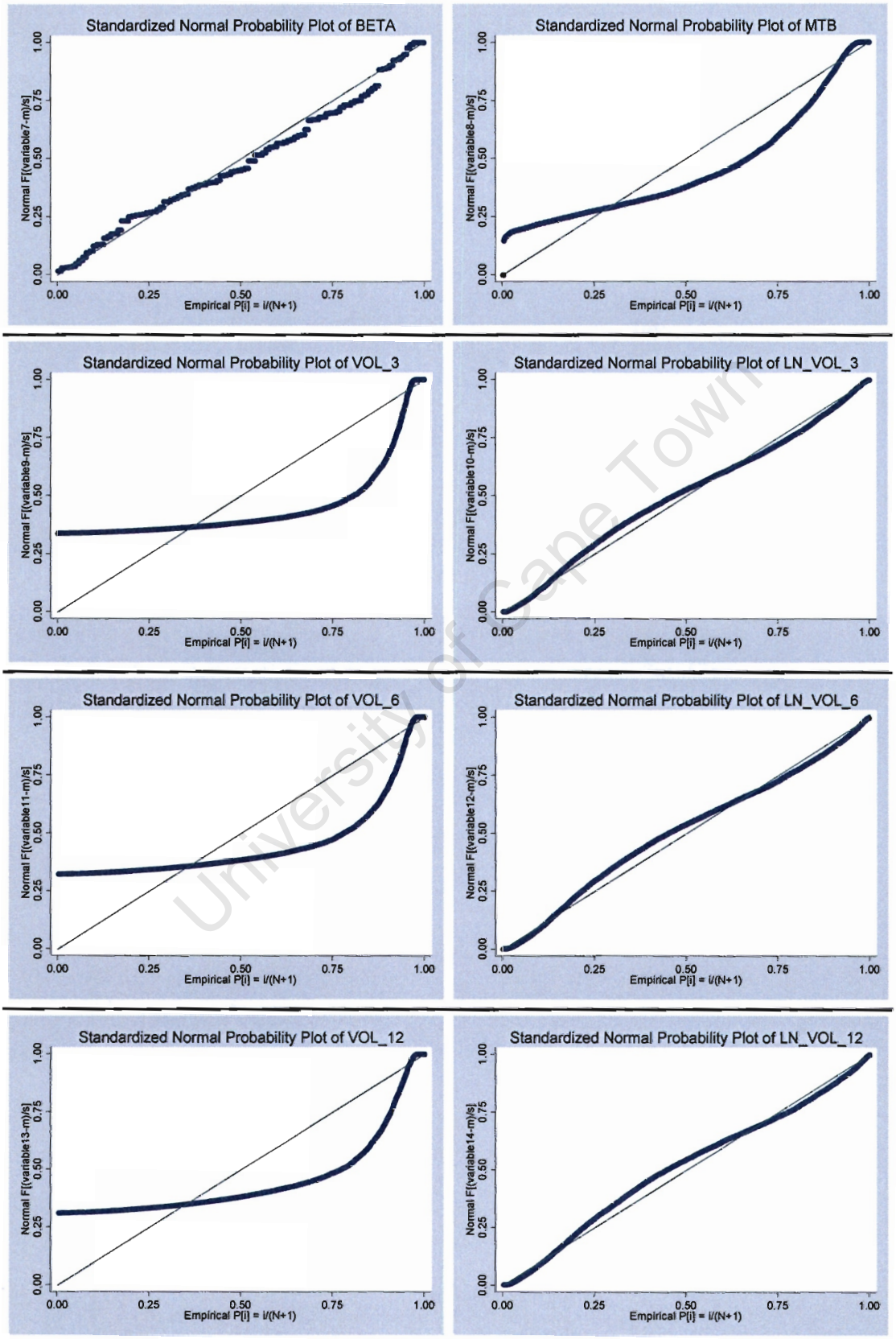
This appendix shows standardized normal probability plots (P-P plots) for each variable included in the study, providing a graphical method for inspecting the normality of each variable. This plot is simply a scatter diagram with the cumulative proportions of the variable on the x-axis and the cumulative proportions of the normal distribution on the y-axis. If a variable is normally distributed, these proportions should be equal and so the datapoints should lie on a straight, 45 degree line from the origin.

In addition to being able to deduce the degree of normality from inspecting a P-P plot, one is also able to infer how the data is inconsistent with the normal distribution by the shape and degree to which the datapoints conform to the 45 degree reference line (for example, the data is skewed to the right if both ends of the plot bend above this line).



Appendix B.3. Standardized Normal Probability Plots (P–P Plots)

Continued.



Appendix B.3. Standardized Normal Probability Plots (P–P Plots)

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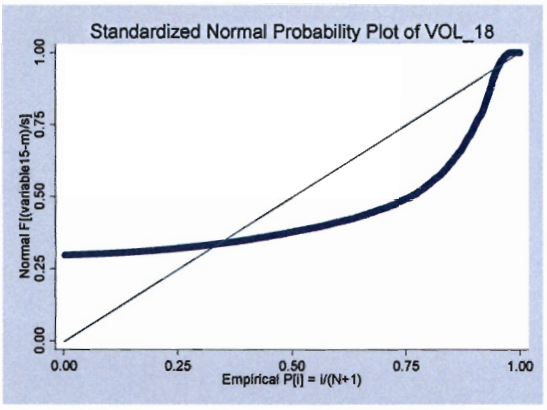

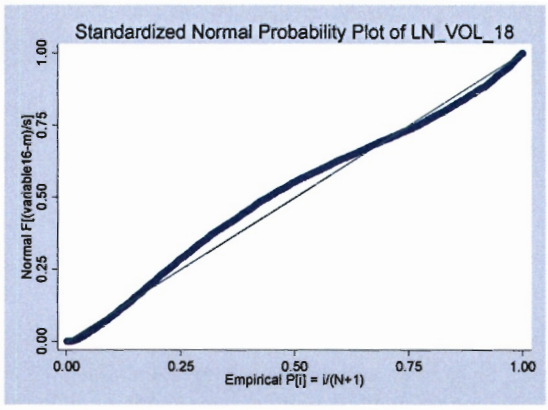

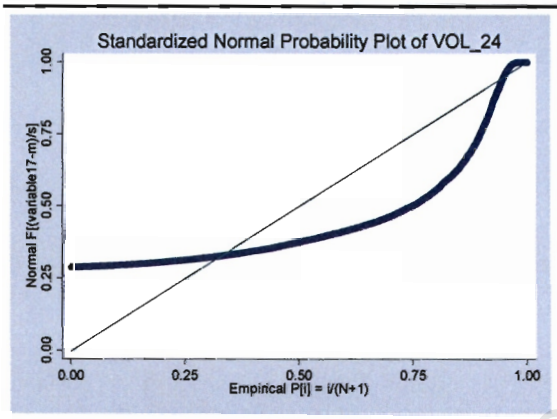

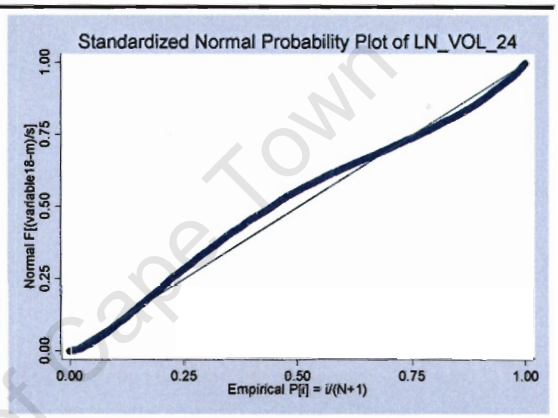

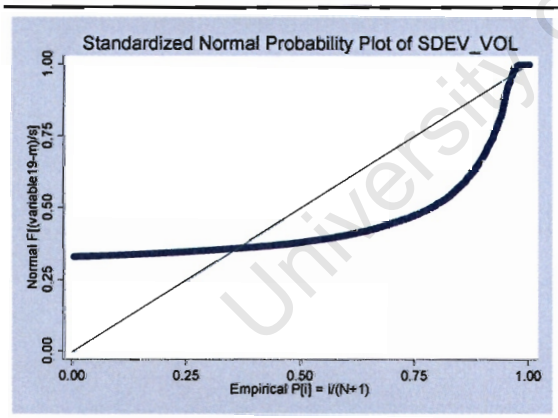

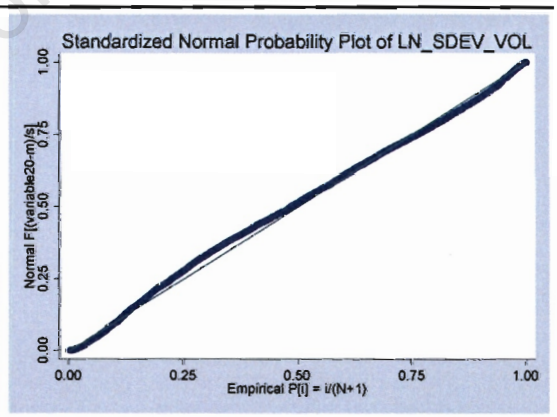

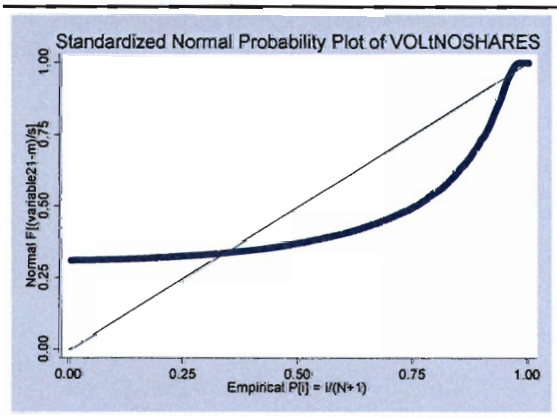

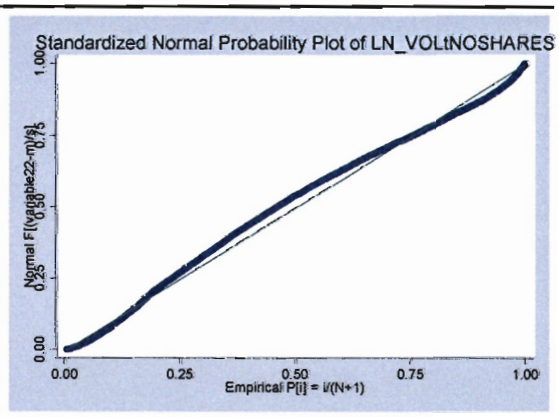

Appendix B.3. Standardized Normal Probability Plots (P-P Plots)

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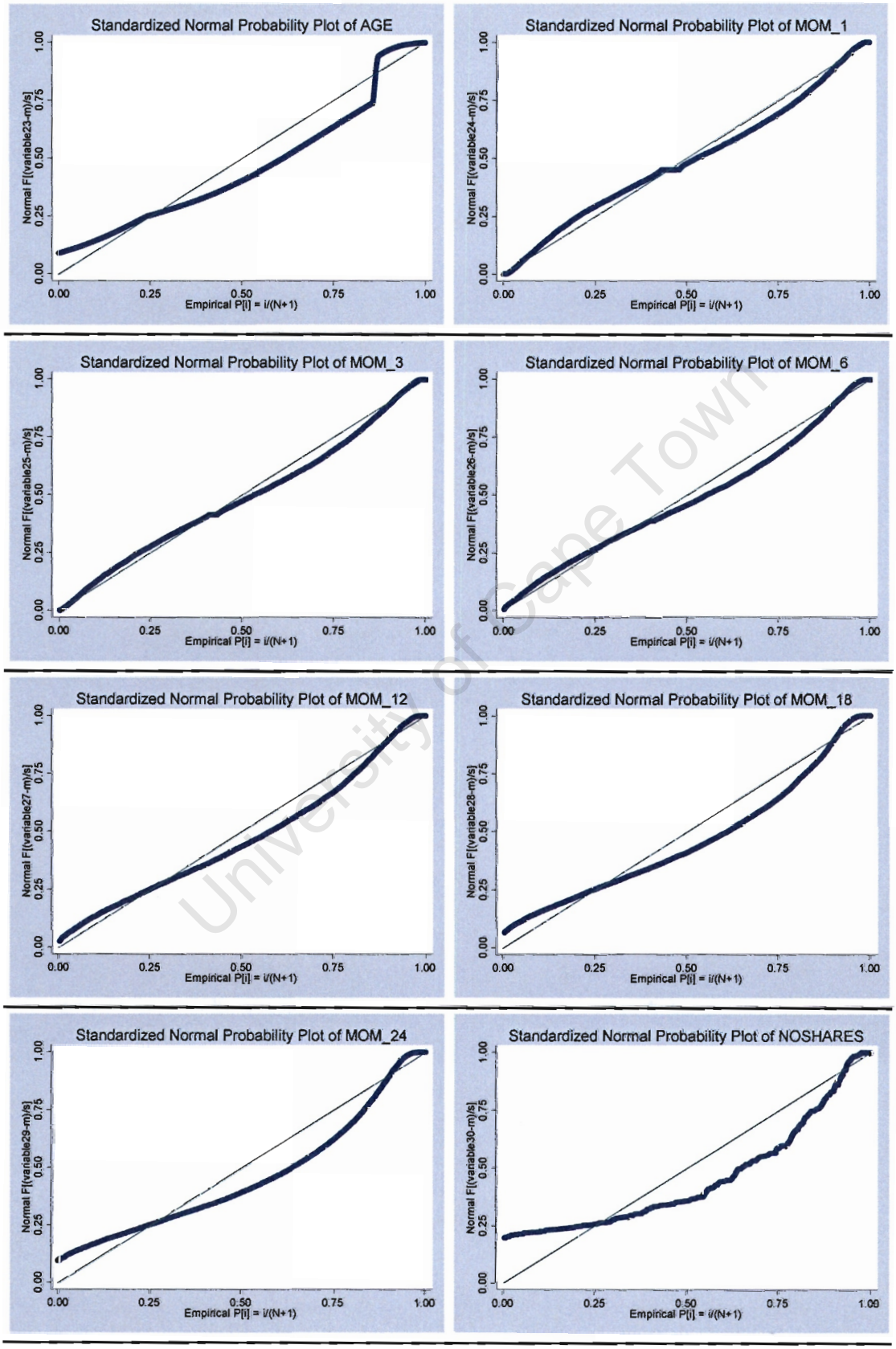

Appendix B.3. Standardized Normal Probability Plots (P-P Plots)

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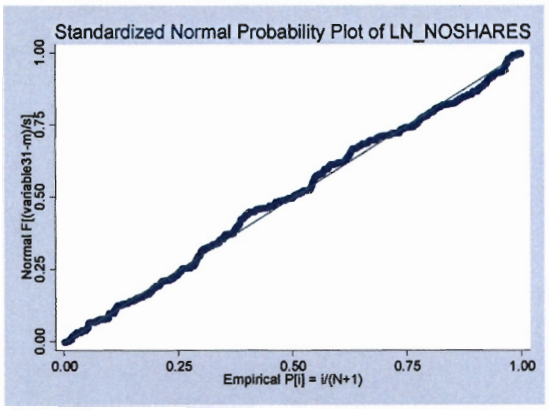

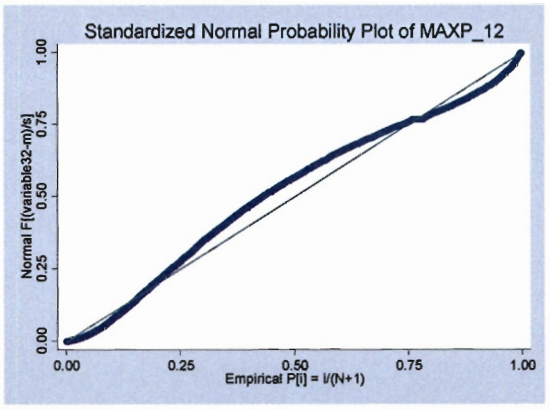

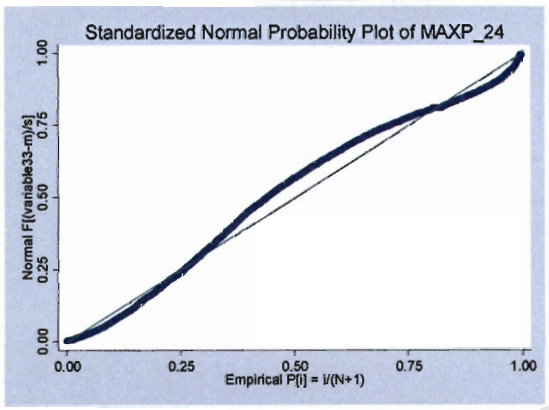

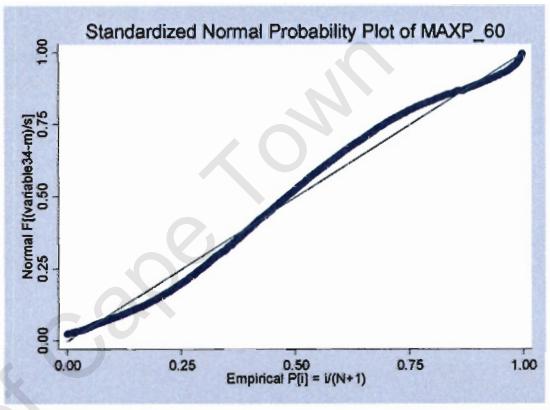

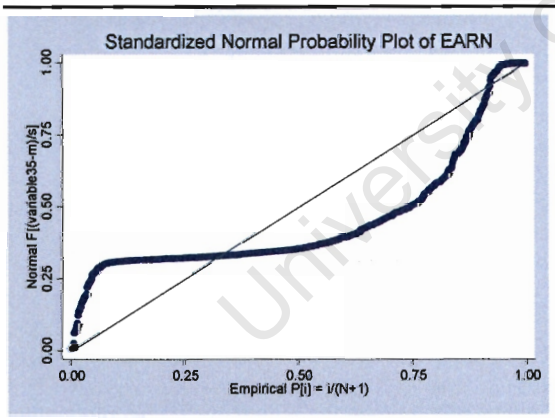

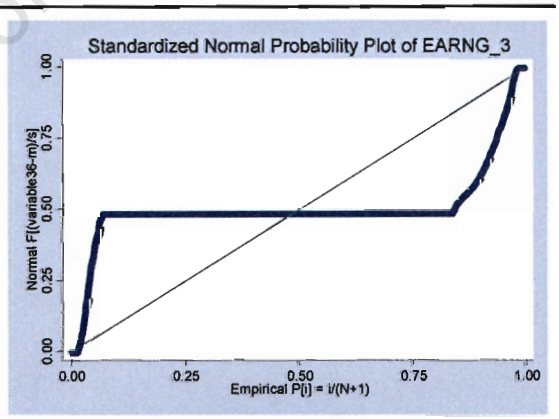

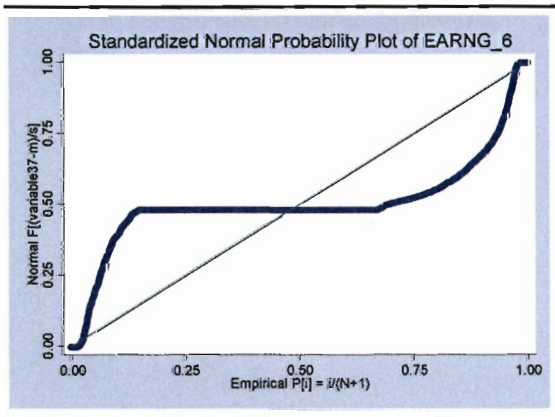

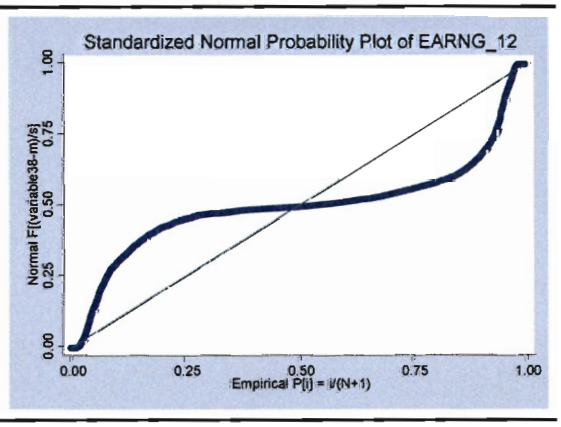

Appendix B.3. Standardized Normal Probability Plots (P-P Plots)

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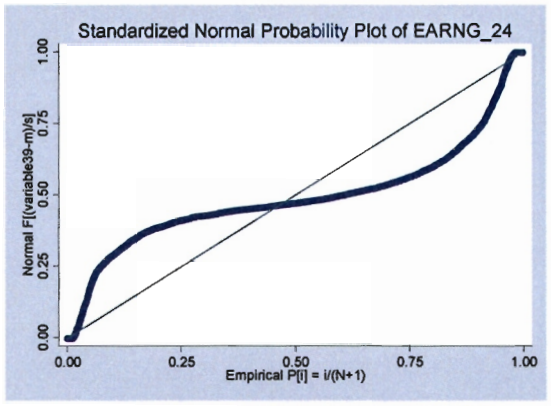
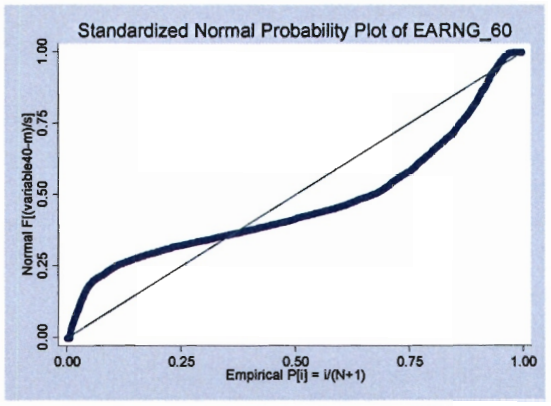
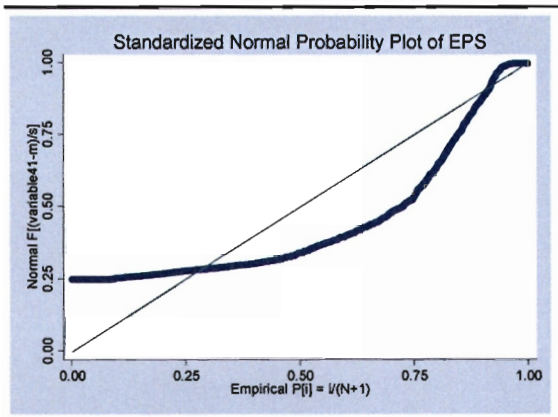
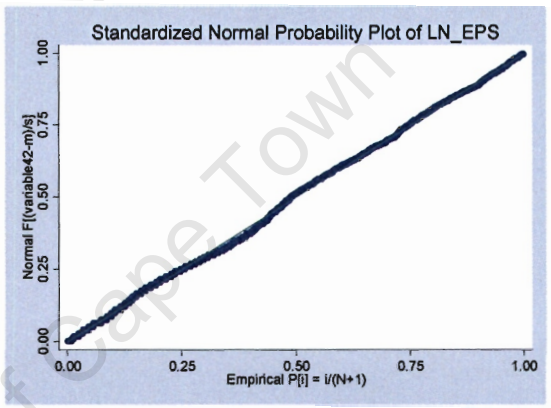
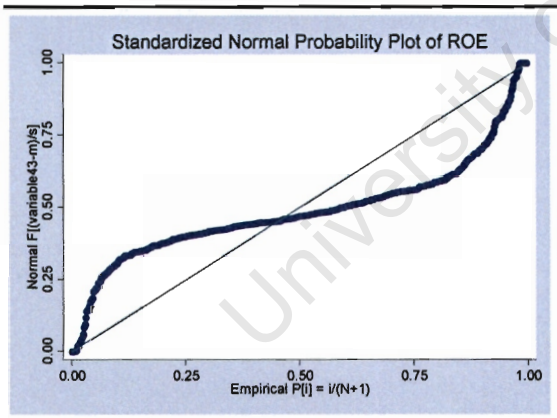
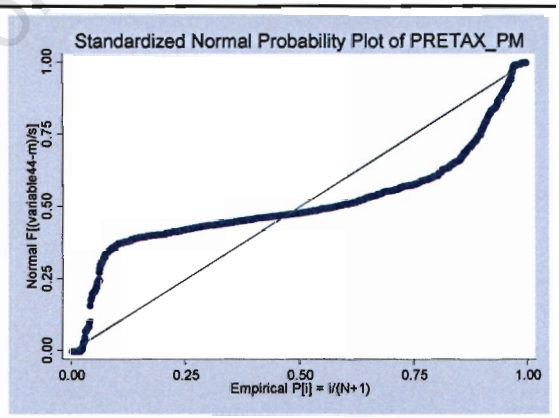


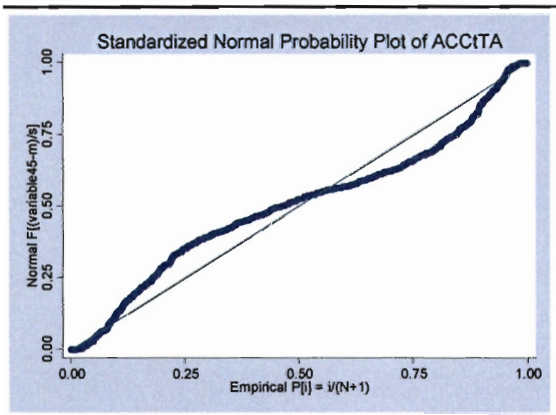


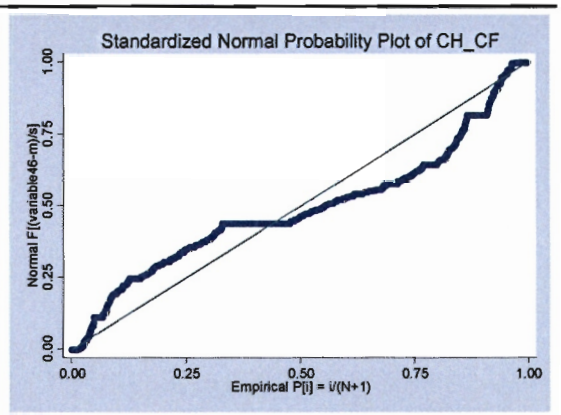






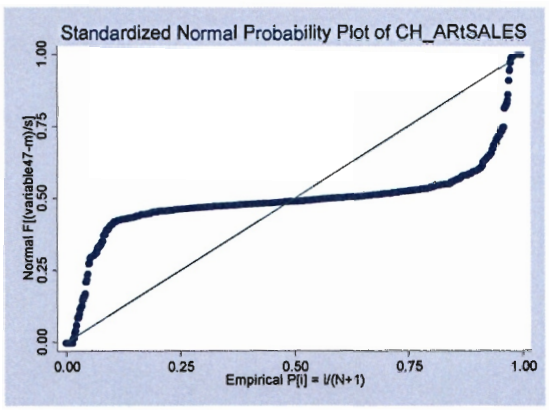


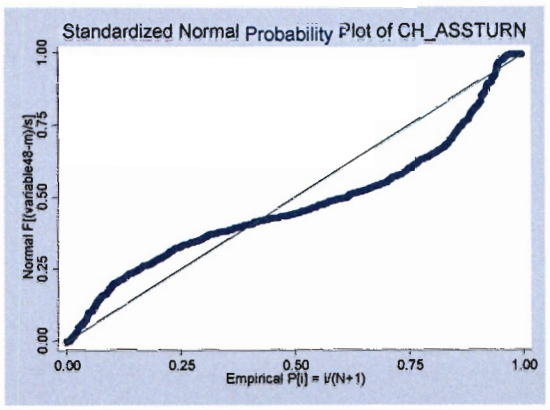


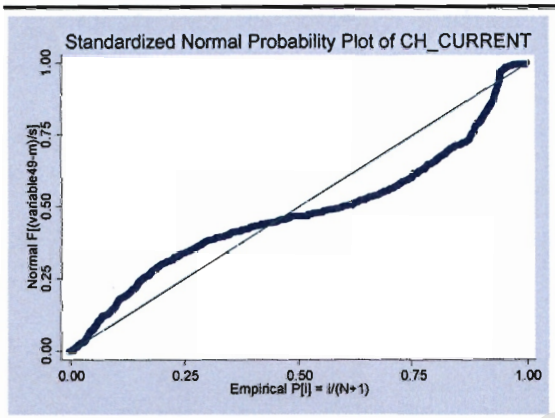


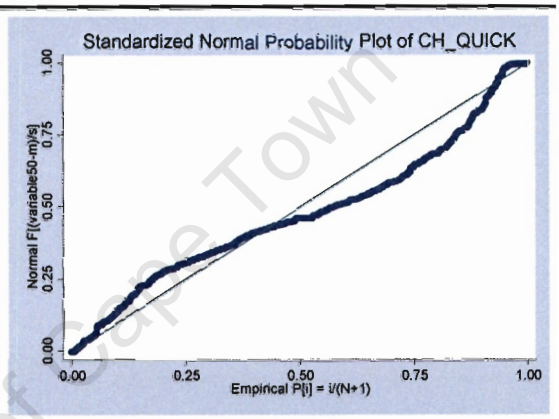
Appendix B.3. Standardized Normal Probability Plots (P-P Plots)

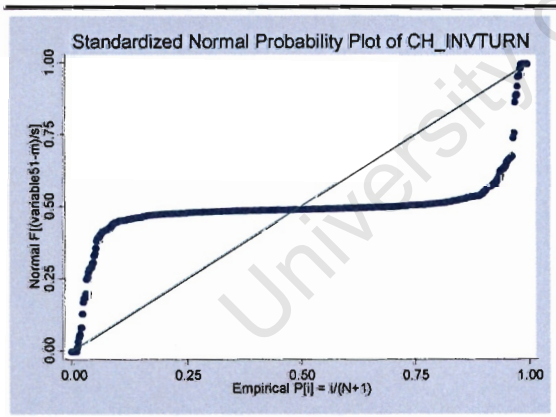
Continued.

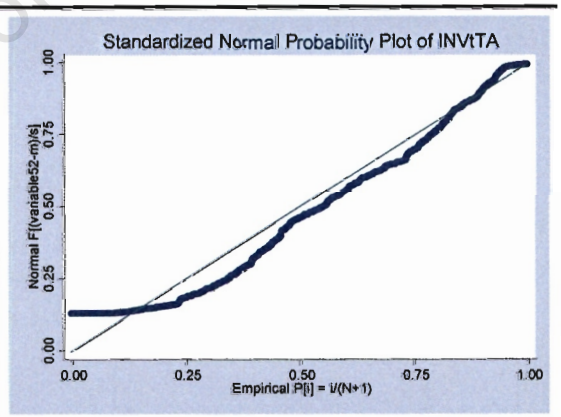


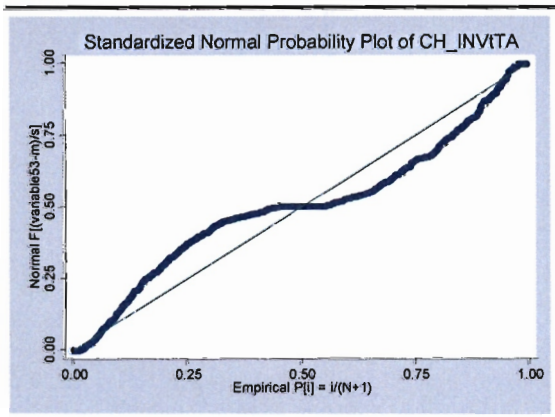


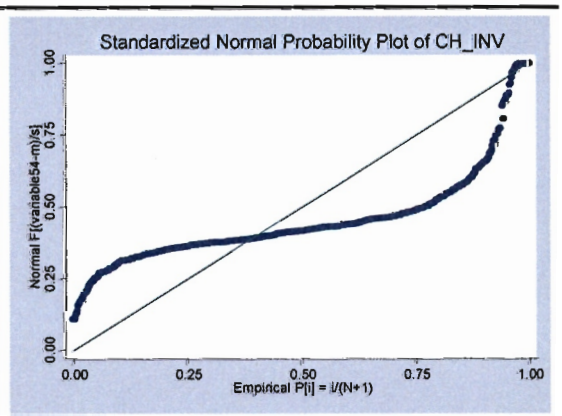






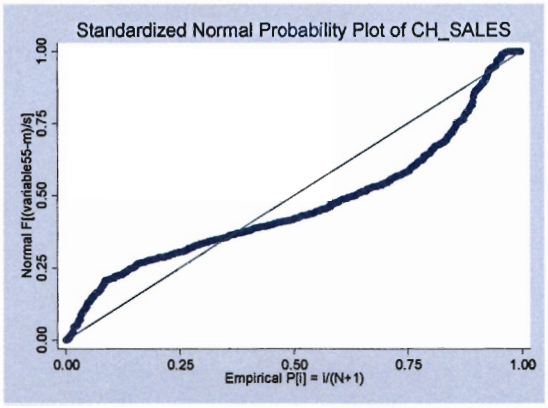


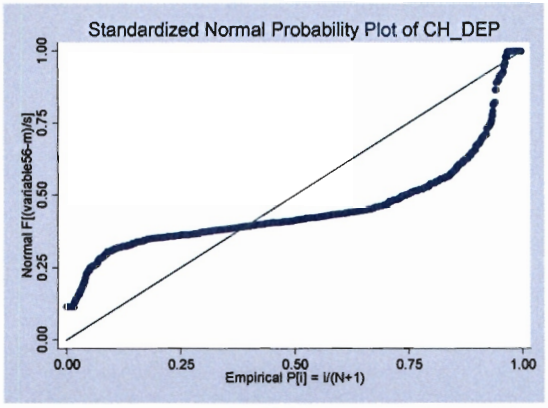


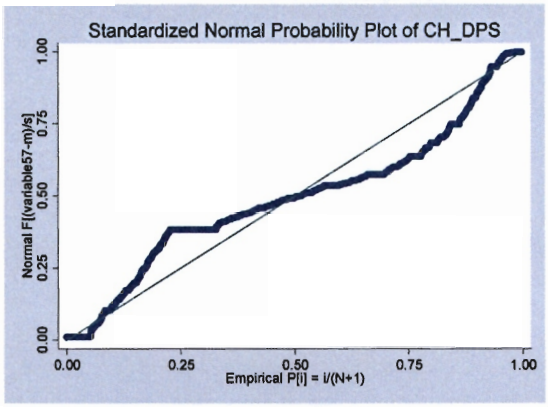


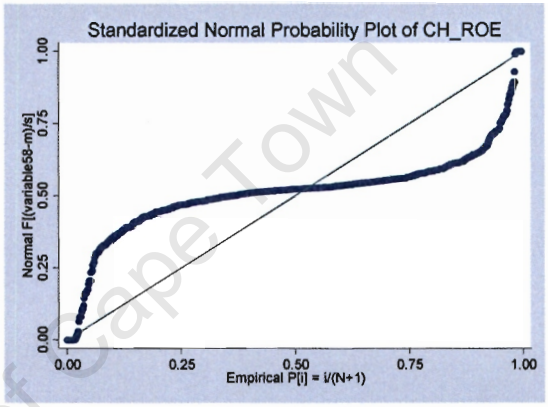
Appendix B.3. Standardized Normal Probability Plots (P-P Plots)

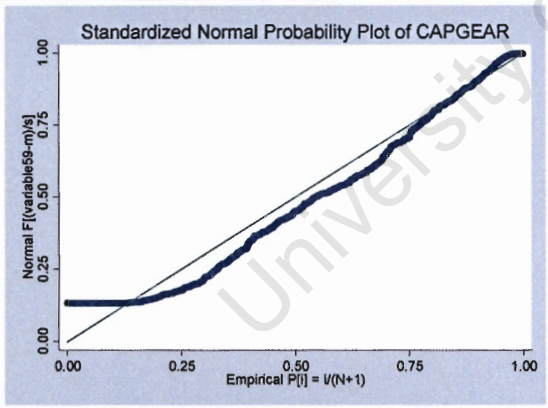
Continued.

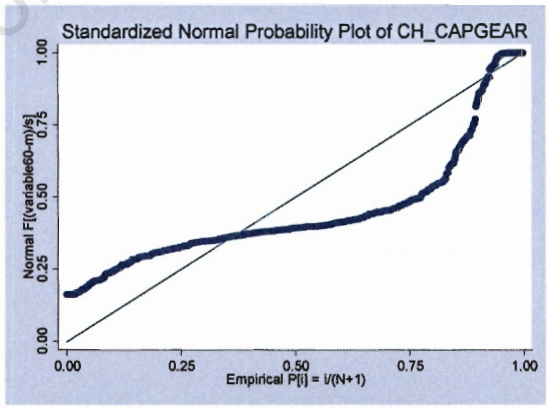


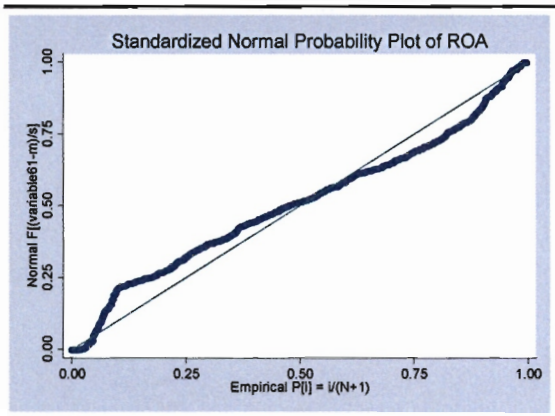


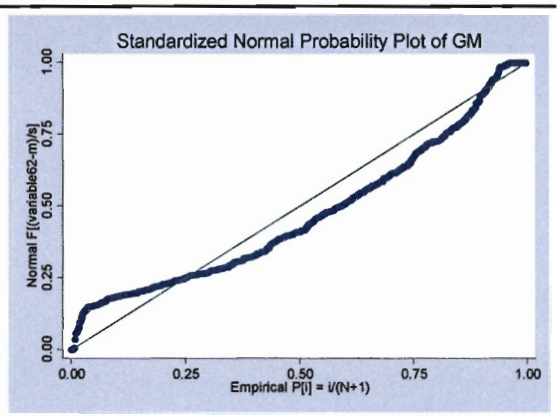






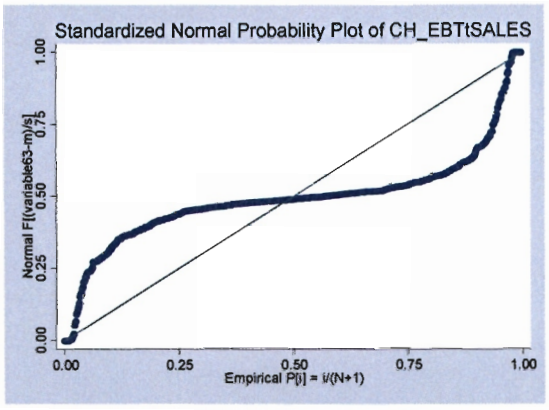


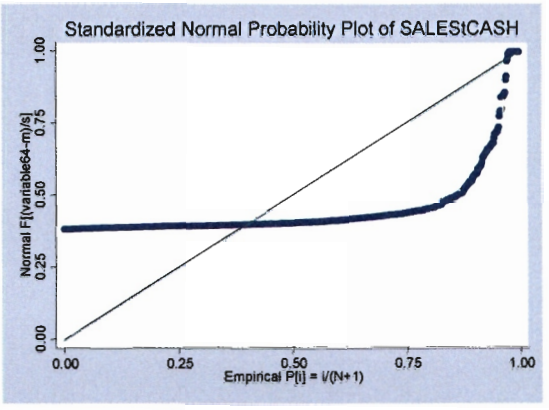


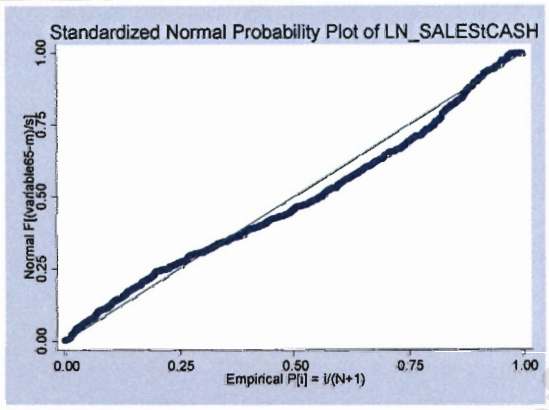


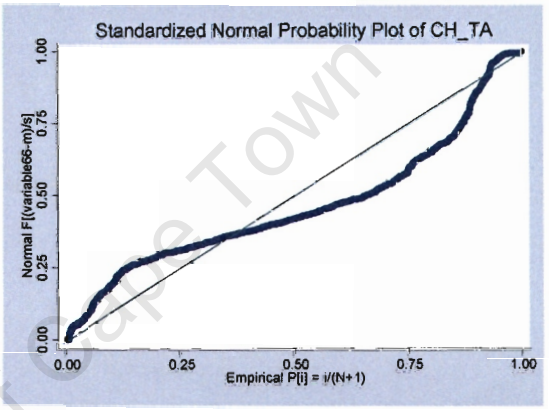
Appendix B.3. Standardized Normal Probability Plots (P-P Plots)

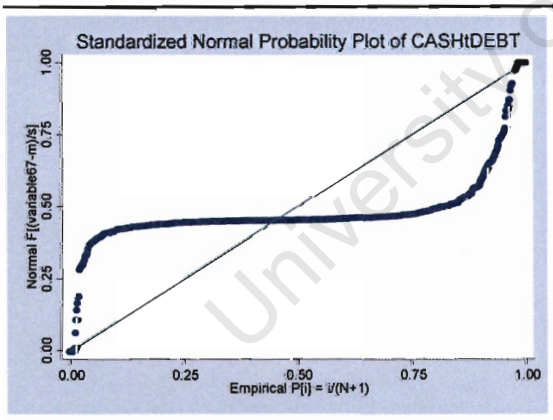
Continued.

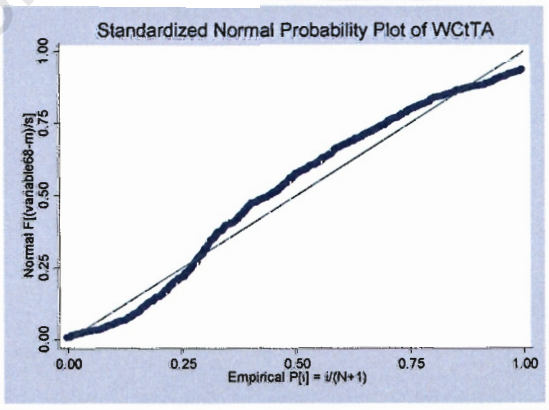


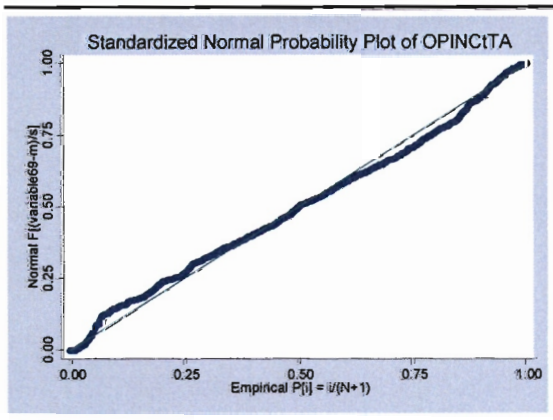


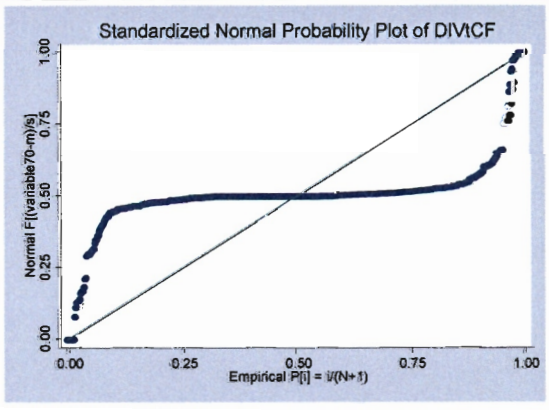






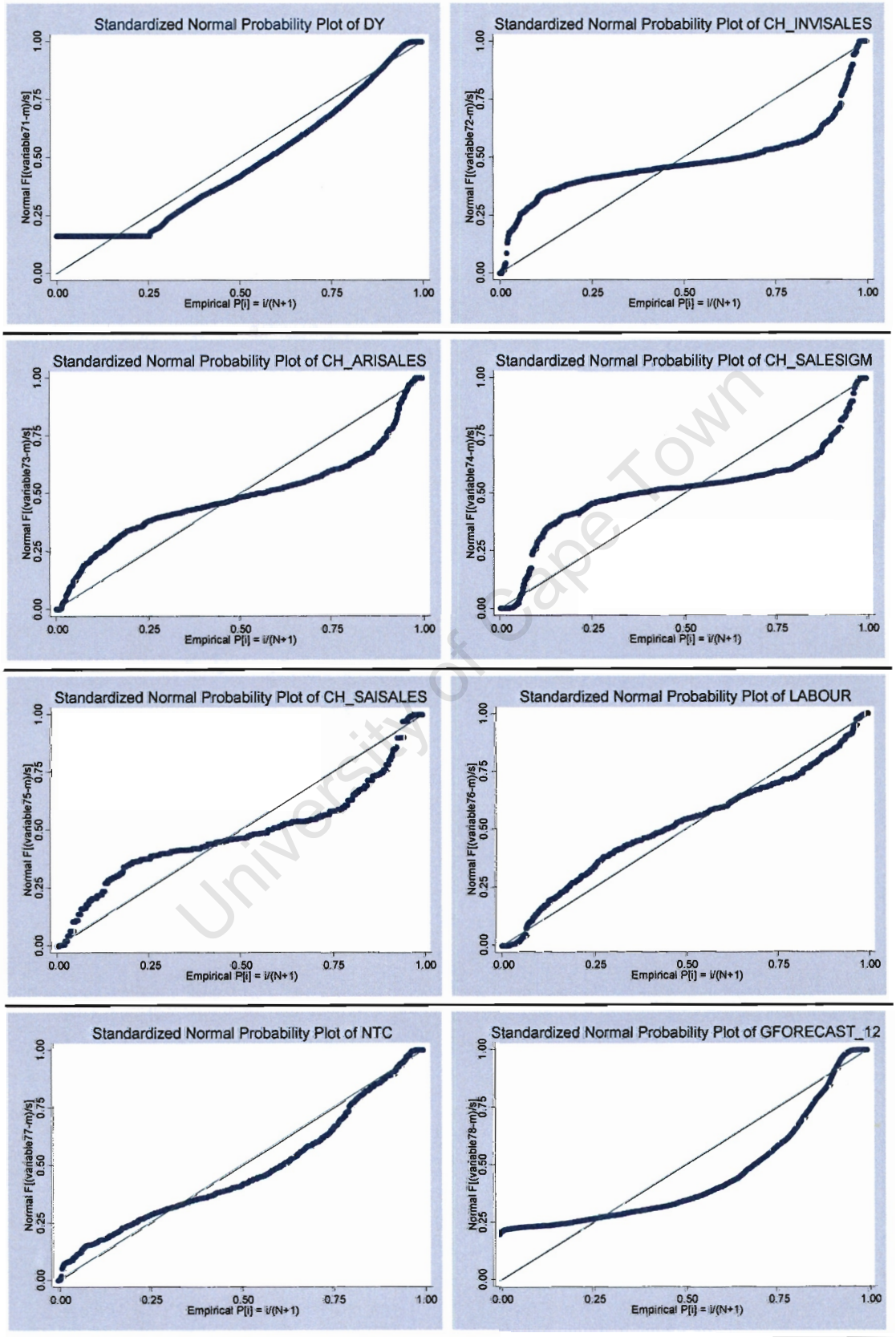






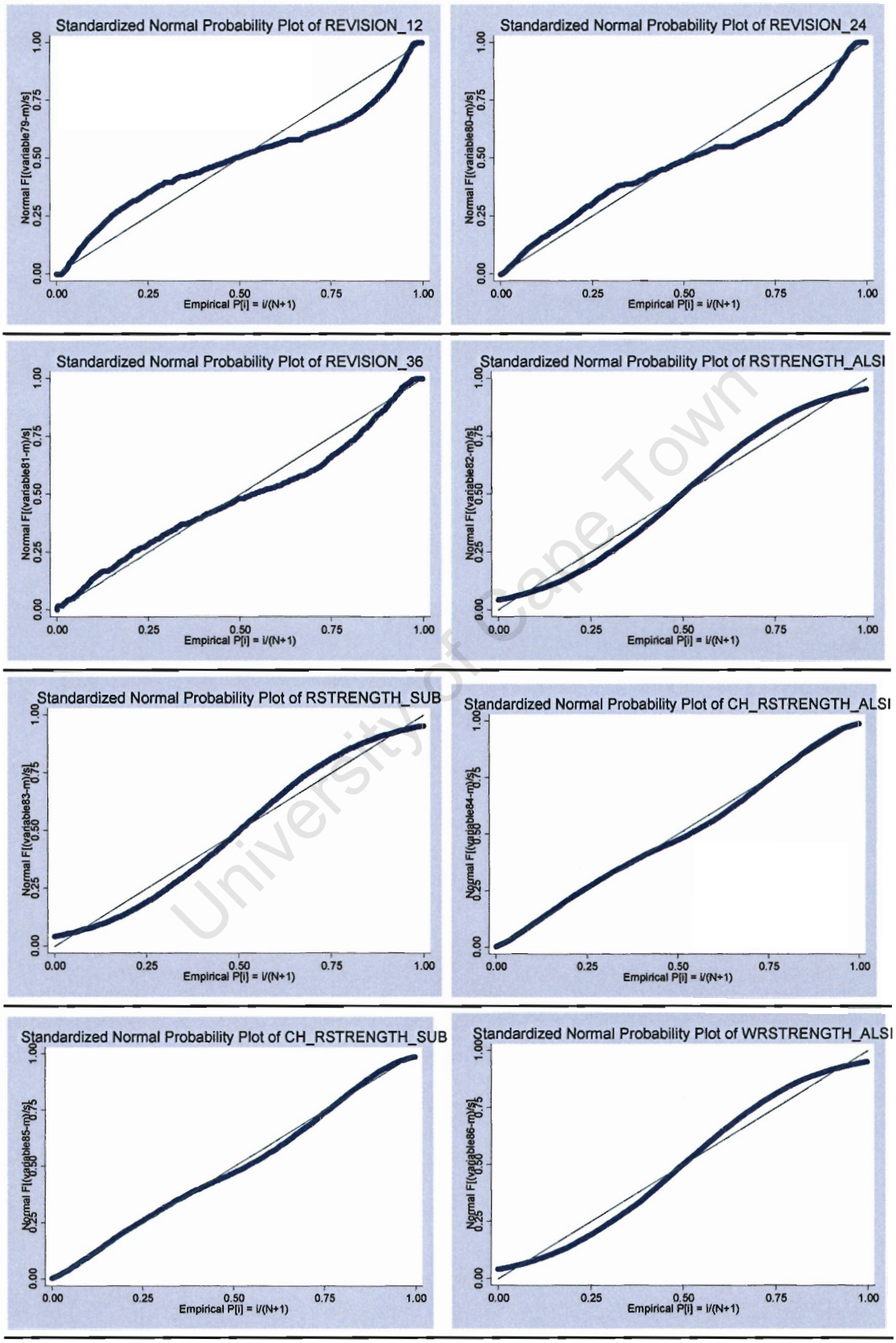
Appendix B.3. Standardized Normal Probability Plots (P-P Plots)

Continued.



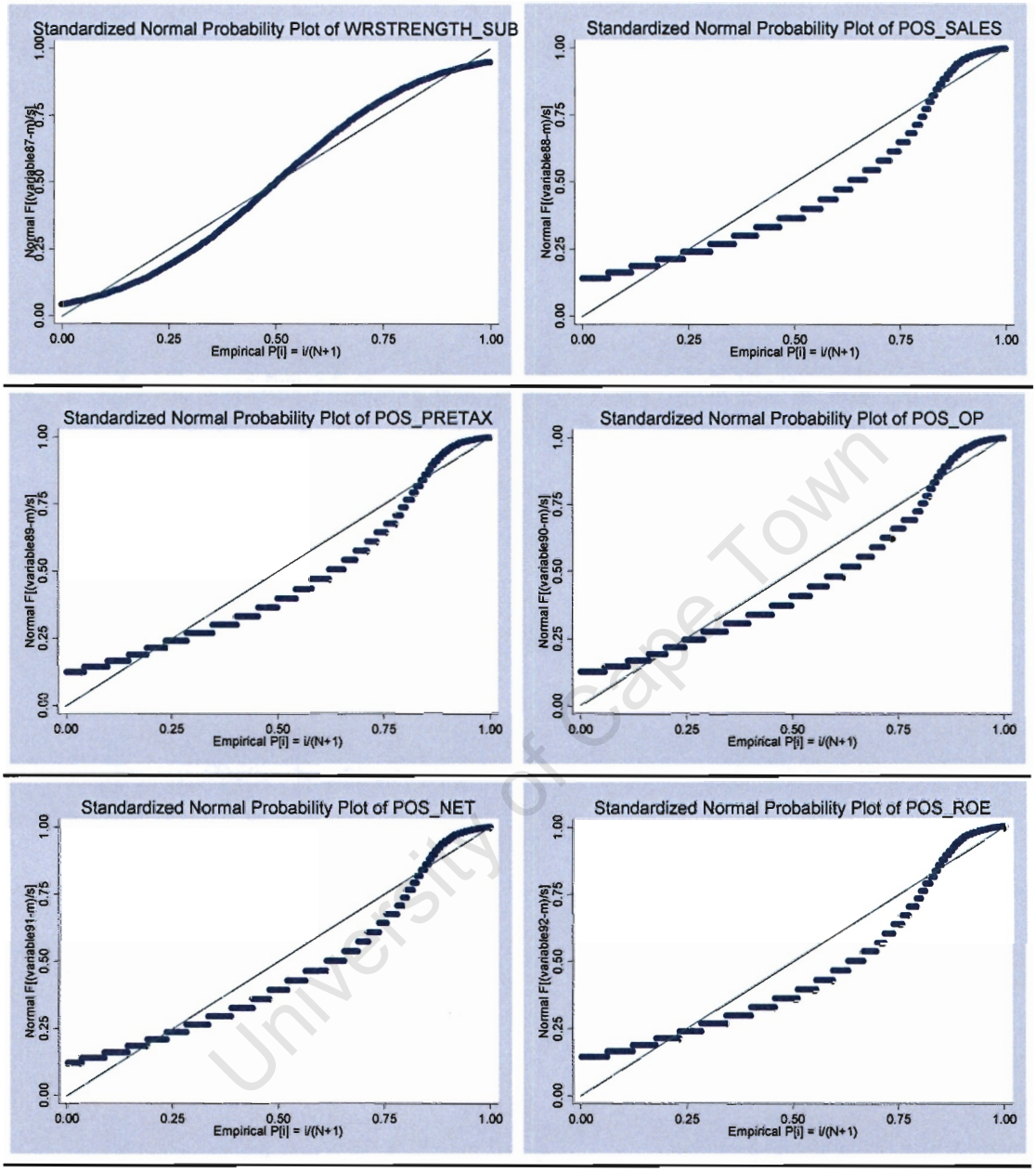
Appendix B.3. Standardized Normal Probability Plots (P-P Plots)

Continued.



Appendix B.3. Standardized Normal Probability Plots (P-P Plots)

Continued.



Appendix B.4. Results of Tests for Normality

The table summarizes the results from two tests for normality on each of the variables used in this study. The first column shows the p-values for the Shapiro-Francia test for normality. The p-values for all variables for which the null hypothesis that the data are not normally distributed cannot be rejected at the 95% confidence level are shown in bold. The p-values for those variables which can be deemed non-normal at the 5% but not the 4% significance level are shown in italics.

The second column shows the results of a graphical test for normality - the inspection of Standardized Normal Probability Plots (P-P plots).

The final column shows the final results from the combination of these two tests. If the assumption of normality under the Shapiro-Francia test cannot be rejected at the 95% confidence level, or it can be rejected between the 4% and 5% significance level and is deemed normal according to its P-P Plot, the variable is declared to be normally distributed.

Variable	Shapiro-Francia	P-P Plot	Normal?
INST_OWN	0.00001	No	No
MAN_OWN	0.00001	Yes	No
PE	**0.08183**	No	Yes
EY	**0.11695**	Yes	Yes
MV	**0.12246**	No	Yes
LN_MV	**0.17916**	Yes	Yes
BETA	**0.19727**	Yes	Yes
MTB	*0.04832*	Yes	Yes
VOL_3	0.02576	No	No
LN_VOL_3	*0.04533*	Yes	Yes
VOL_6	0.02986	No	No
LN_VOL_6	*0.04506*	Yes	Yes
VOL_12	0.03105	No	No
LN_VOL_12	*0.04607*	Yes	Yes
VOL_18	0.03119	No	No
LN_VOL_18	*0.04487*	Yes	Yes
VOL_24	0.03129	No	No
LN_VOL_24	*0.04455*	Yes	Yes
SDEV_VOL	0.03874	No	No
LN_SDEV_VOL	**0.07511**	Yes	Yes
VOLtNOSHARES	0.03273	No	No
LN_VOLtNOSHARES	**0.05196**	Yes	Yes
AGE	**0.12951**	Yes	Yes
MOM_1	**0.13561**	Yes	Yes
MOM_3	**0.13252**	Yes	Yes
MOM_6	**0.12075**	Yes	Yes
MOM_12	**0.10531**	Yes	Yes
MOM_18	**0.09163**	Yes	Yes
MOM_24	**0.07932**	Yes	Yes
NOSHARES	**0.12422**	Yes	Yes
LN_NOSHARES	**0.17054**	Yes	Yes
MAXP_12	**0.13595**	Yes	Yes
MAXP_24	**0.13694**	Yes	Yes
MAXP_60	**0.13697**	Yes	Yes
EARN	0.03626	No	No
EARNG_3	0.02651	No	No
EARNG_6	0.02103	No	No
EARNG_12	0.01310	No	No
EARNG_24	0.00400	No	No
EARNG_60	0.00001	No	No
EPS	**0.11611**	No	Yes
LN_EPS	**0.45275**	Yes	Yes
ROE	0.01474	No	No
PRETAX_PM	0.03033	No	No
ACCtTA	*0.04144*	Yes	Yes
CH_CF	0.00708	Yes	No

Variable	Shapiro-Francia	P-P Plot	Normal?
CH_ARtSALES	0.00221	No	No
CH_ASSTURN	0.01122	Yes	No
CH_CURRENT	0.00301	Yes	No
CH_QUICK	0.00262	Yes	No
CH_INVTURN	0.00073	No	No
INVtTA	0.01663	Yes	No
CH_INVtTA	0.00522	Yes	No
CH_INV	0.00109	No	No
CH_SALES	0.01177	Yes	No
CH_DEP	0.00323	No	No
CH_DPS	0.01399	Yes	No
CH_ROE	0.00393	No	No
CAPGEAR	*0.04138*	Yes	Yes
CH_CAPGEAR	0.00277	No	No
ROA	0.03869	Yes	No
GM	0.00019	Yes	No
CH_EBTtSALES	0.01113	No	No
SALEStCASH	0.02437	No	No
LN_SALEStCASH	0.0312	Yes	No
CH_TA	0.01553	Yes	No
CASHtDEBT	0.00949	No	No
WCtTA	0.01202	Yes	No
OPINCtTA	*0.04426*	Yes	Yes
DIVtCF	0.00002	No	No
DY	**0.12929**	Yes	Yes
CH_INVtSALES	0.00084	No	No
CH_ARtSALES	0.00271	Yes	No
CH_SALESIGM	0.00001	No	No
CH_SAtSALES	0.00001	Yes	No
LABOUR	0.00006	Yes	No
NTC	0.01106	Yes	No
GFORECAST_12	0.00103	No	No
REVISION_12	0.00094	Yes	No
REVISION_24	0.00014	Yes	No
REVISION_36	0.00001	Yes	No
RSTRENGTH_ALSI	**0.10997**	Yes	Yes
RSTRENGTH_SUB	**0.11005**	Yes	Yes
CH_RSTRENGTH_ALSI	**0.14857**	Yes	Yes
CH_RSTRENGTH_SUB	**0.1444**	Yes	Yes
WRSTRENGTH_ALSI	**0.10988**	Yes	Yes
WRSTRENGTH_SUB	**0.10994**	Yes	Yes
POS_SALES	0.01299	No	No
POS_PRETAX	0.03262	No	No
POS_OP	0.03162	No	No
POS_NET	0.033	No	No
POS_ROE	0.01628	No	No

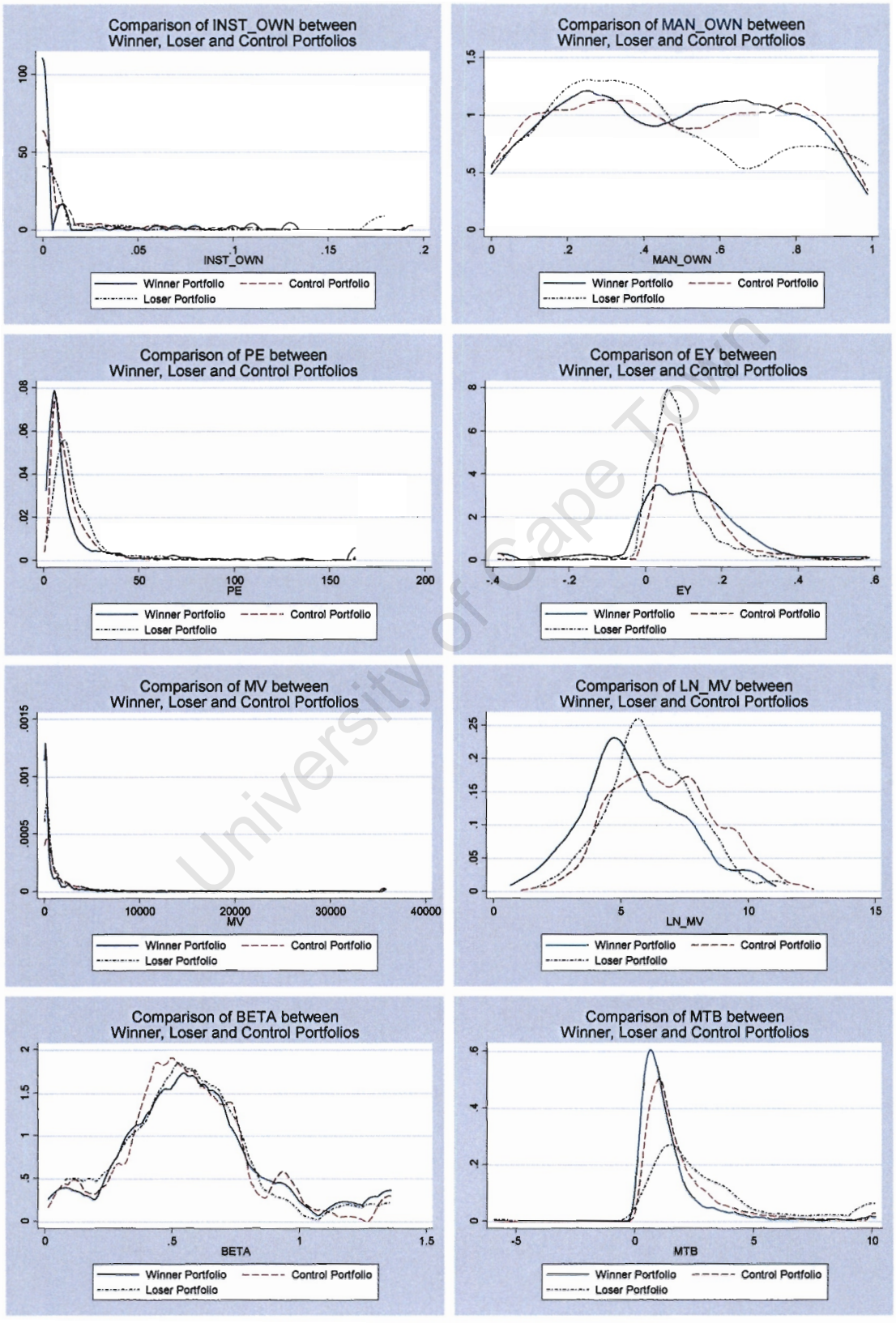
Appendix B.5. Results of Tests for Identical Distributions

The table summarizes the results from the Smirnov two sample test for identical distribution functions between both winner and non-winner portfolios, and loser and non-loser portfolios. The table shows the results for this test for every variable considered for this study. The "T" column shows the test statistic for the Smirnov test which is the maximum distance between the two distributions in questions. The p-values for each test are also provided. Those variables for which the null hypothesis (that the distribution functions are identical) can be rejected at the 5% significance level are highlighted in the table.

	Winners vs Non-winners		Losers vs Non-losers	
	T	P-value	T	P-value
INST_OWN	0.3845	0.0000	0.2195	0.0080
MAN_OWN	0.2443	0.0000	0.1319	0.2760
PE	0.1165	0.0000	0.2015	0.0000
EY	0.1361	0.0000	0.1978	0.0000
MV	0.2113	0.0000	0.1255	0.0000
LN_MV	0.0254	0.3030	0.1299	0.0000
BETA	0.0603	0.0000	0.0497	0.0600
MTB	0.0667	0.0000	0.2473	0.0000
VOL_3	0.0636	0.0000	0.0551	0.0710
LN_VOL_3	0.0347	0.1300	0.0594	0.0420
VOL_6	0.0981	0.0000	0.0564	0.0580
LN_VOL_6	0.0288	0.3020	0.0575	0.0510
VOL_12	0.0435	0.0250	0.0452	0.2030
LN_VOL_12	0.0160	0.9270	0.0454	0.1980
VOL_18	0.0486	0.0080	0.0512	0.1080
LN_VOL_18	0.0158	0.9360	0.0517	0.1000
VOL_24	0.1186	0.0000	0.0578	0.0480
LN_VOL_24	0.0268	0.3760	0.0598	0.0360
SDEV_VOL	0.0417	0.0320	0.0279	0.7580
LN_SDEV_VOL	0.0323	0.1670	0.0287	0.7260
VOLINOSHARES	0.1023	0.0000	0.0556	0.0600
LN_VOLINOSHARES	0.0376	0.0740	0.0543	0.0710
AGE	0.1450	0.0000	0.1878	0.0000
MOM_1	0.0701	0.0000	0.1589	0.0000
MOM_3	0.0376	0.0340	0.1969	0.0000
MOM_6	0.0254	0.3180	0.2074	0.0000
MOM_12	0.0904	0.0000	0.1754	0.0000
MOM_18	0.1476	0.0000	0.1782	0.0000
MOM_24	0.1213	0.0000	0.1370	0.0000
NOSHARES	0.0772	0.0000	0.0648	0.0050
LN_NOSHARES	0.0539	0.0000	0.0576	0.0190
MAXP_12	0.1021	0.0000	0.2298	0.0000
MAXP_24	0.1450	0.0000	0.2269	0.0000
MAXP_60	0.1459	0.0000	0.1435	0.0000
EARN	0.1713	0.0000	0.1761	0.0000
EARNG_3	0.0274	0.3760	0.0715	0.0280
EARNG_6	0.0548	0.0030	0.1180	0.0000
EARNG_12	0.1401	0.0000	0.1857	0.0000
EARNG_24	0.1431	0.0000	0.1169	0.0020
EARNG_60	0.0430	0.1690	0.1764	0.0000
EPS	0.2428	0.0000	0.1158	0.0000
LN_EPS	0.0588	0.0000	0.1097	0.0000
ROE	0.0783	0.0000	0.1480	0.0000
PRETAX_PM	0.0588	0.0010	0.0774	0.0110
ACCITA	0.0488	0.0080	0.1742	0.0000
CH_CF	0.0722	0.0000	0.1256	0.0000
CH_ARISALES	0.0678	0.0010	0.1745	0.0000
CH_ASSTURN	0.0756	0.0000	0.1451	0.0000
CH_CURRENT	0.0821	0.0000	0.0894	0.0170
CH_QUICK	0.0576	0.0060	0.1130	0.0020
CH_INVTURN	0.0500	0.0320	0.0749	0.0930
INVITA	0.1077	0.0000	0.1362	0.0000
CH_INVITA	0.0470	0.0330	0.0870	0.0200
CH_INV	0.0942	0.0000	0.1717	0.0000
CH_SALES	0.1361	0.0000	0.2377	0.0000
CH_DEP	0.1047	0.0000	0.2953	0.0000
CH_DPS	0.1353	0.0000	0.1071	0.0010
CH_ROE	0.0799	0.0000	0.1521	0.0000
CAPGEAR	0.1691	0.0000	0.0718	0.0210
CH_CAPGEAR	0.1055	0.0000	0.0856	0.0210
ROA	0.1174	0.0000	0.0827	0.0050
GM	0.1762	0.0000	0.2369	0.0000
CH_EBTISALES	0.0826	0.0000	0.1667	0.0000
SALESICASH	0.0895	0.0000	0.0963	0.0010
LN_SALESICASH	0.0472	0.0140	0.1023	0.0000
CH_TA	0.0753	0.0000	0.1725	0.0000
CASHIDEBT	0.0743	0.0000	0.1257	0.0000
WCITA	0.0619	0.0010	0.1460	0.0000
OPINCITA	0.0878	0.0000	0.1625	0.0000
DIVICF	0.0823	0.0010	0.1698	0.0000
DY	0.3321	0.0000	0.2898	0.0000
CH_INVISALES	0.0591	0.0060	0.1324	0.0000
CH_ARISALES	0.0935	0.0000	0.1086	0.0020
CH_SALESIGM	0.1221	0.0000	0.1605	0.0000
CH_SAISALES	0.2401	0.0000	0.1891	0.2780
LABOUR	0.0586	0.0160	0.0964	0.0320
NTC	0.0603	0.0010	0.1748	0.0000
GFORECAST_12	0.0970	0.0000	0.0942	0.0030
REVISION_12	0.1156	0.0000	0.1481	0.0000
REVISION_24	0.0927	0.0000	0.1720	0.0000
REVISION_36	0.0580	0.3170	0.1890	0.0040
RSTRENGTH_ALSI	0.1680	0.0000	0.1350	0.0000
RSTRENGTH_SUB	0.1618	0.0000	0.1422	0.0000
CH_RSTRENGTH_ALSI	0.0629	0.0000	0.0851	0.0000
CH_RSTRENGTH_SUB	0.0534	0.0010	0.0910	0.0000
WRSTRENGTH_ALSI	0.1566	0.0000	0.1279	0.0000
WRSTRENGTH_SUB	0.1447	0.0000	0.1334	0.0000
POS_SALES	0.1745	0.0000	0.1693	0.0000
POS_PRETAX	0.1044	0.0000	0.0487	0.2630
POS_OP	0.0782	0.0000	0.1133	0.0000
POS_NET	0.1019	0.0000	0.0573	0.1150
POS_ROE	0.1768	0.0000	0.1704	0.0000

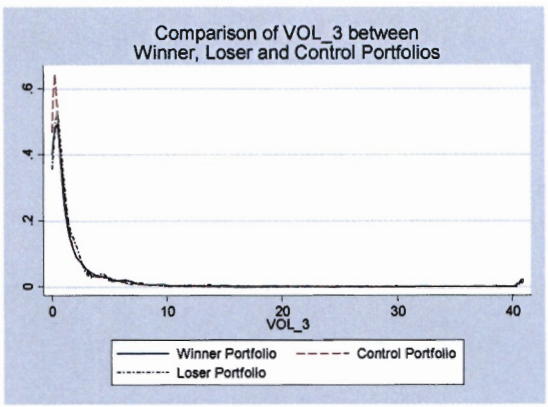
Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios

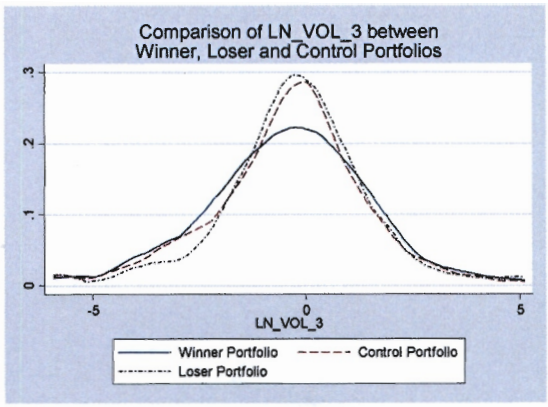
This appendix graphs the distributions of each variable for three portfolios: extreme winners, extreme loser and the control portfolio. This is a graphical representation of the statistics contained in Appendices C.1. and C.2.

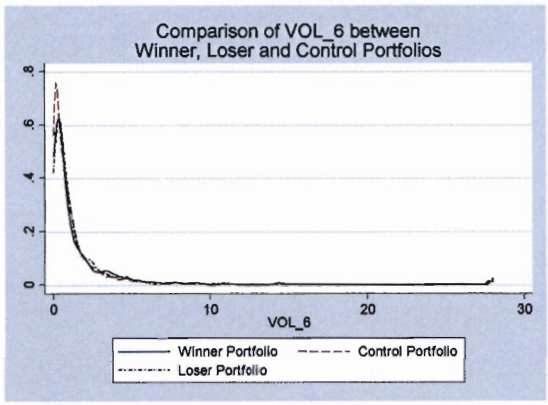


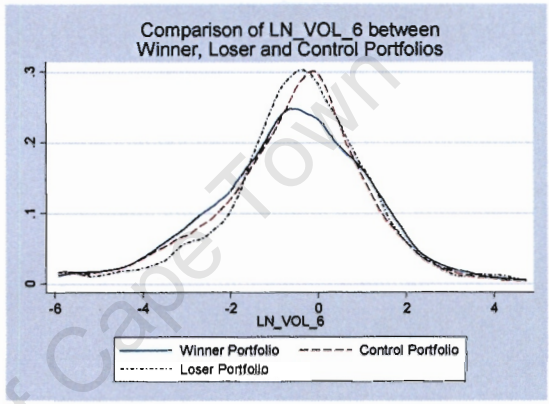
Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios

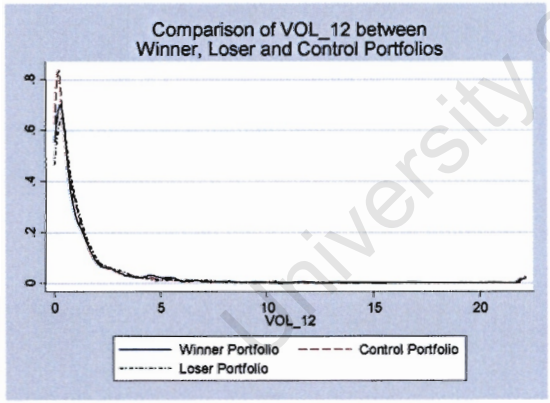
Continued.

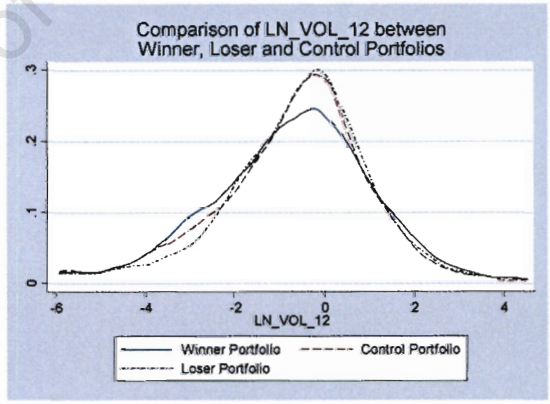


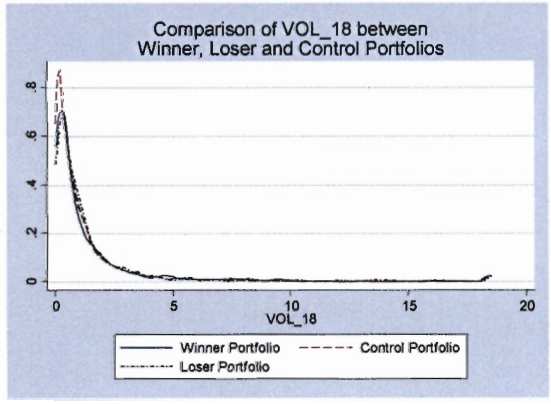


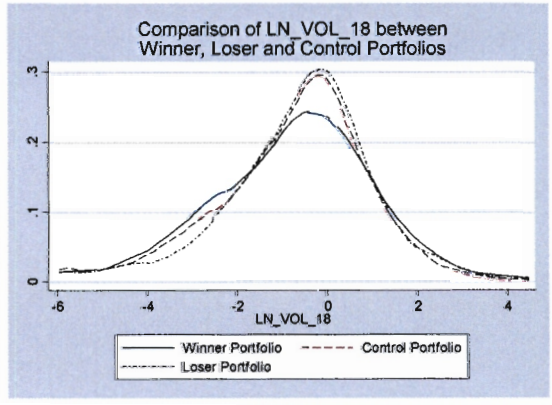












Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios

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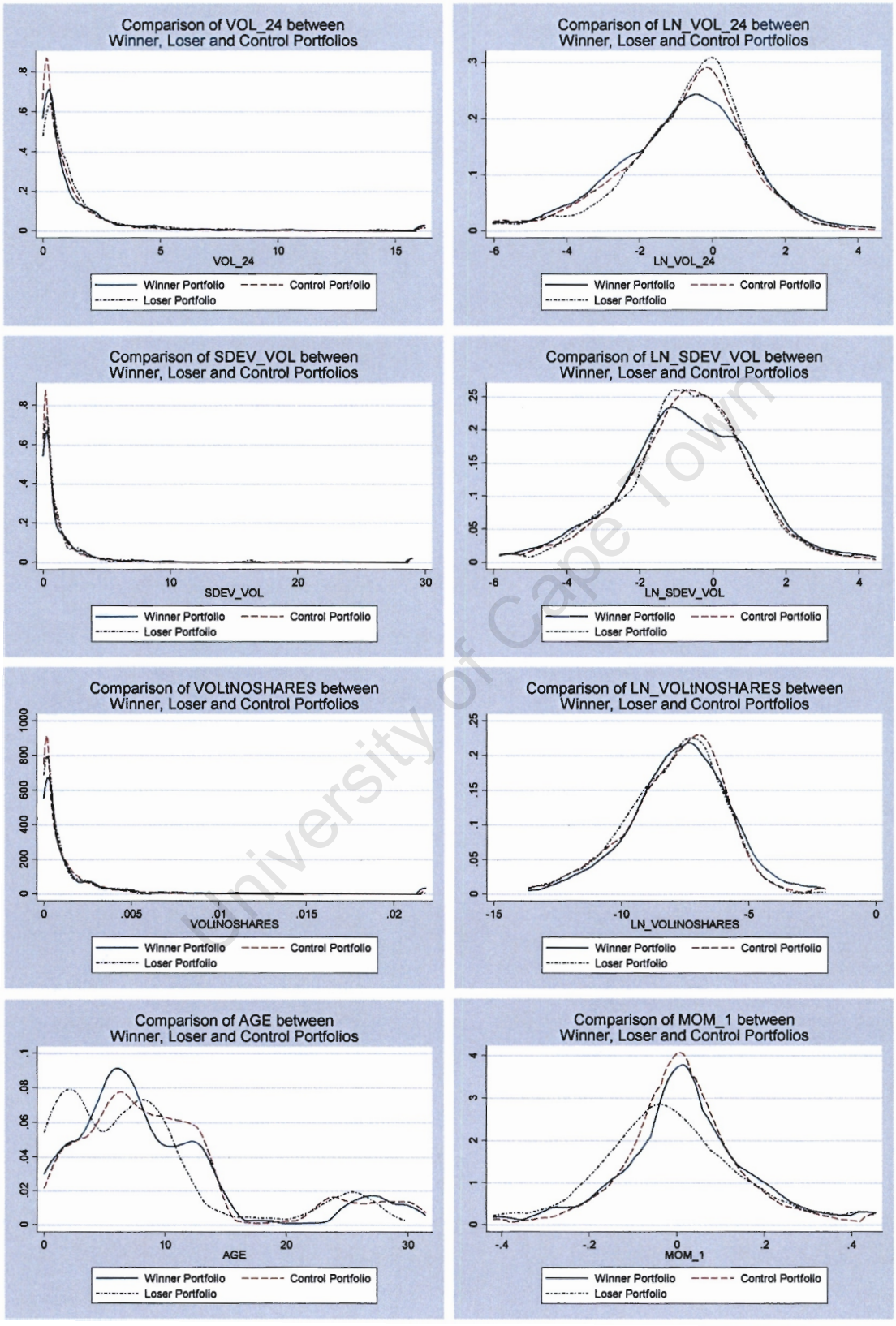

Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios

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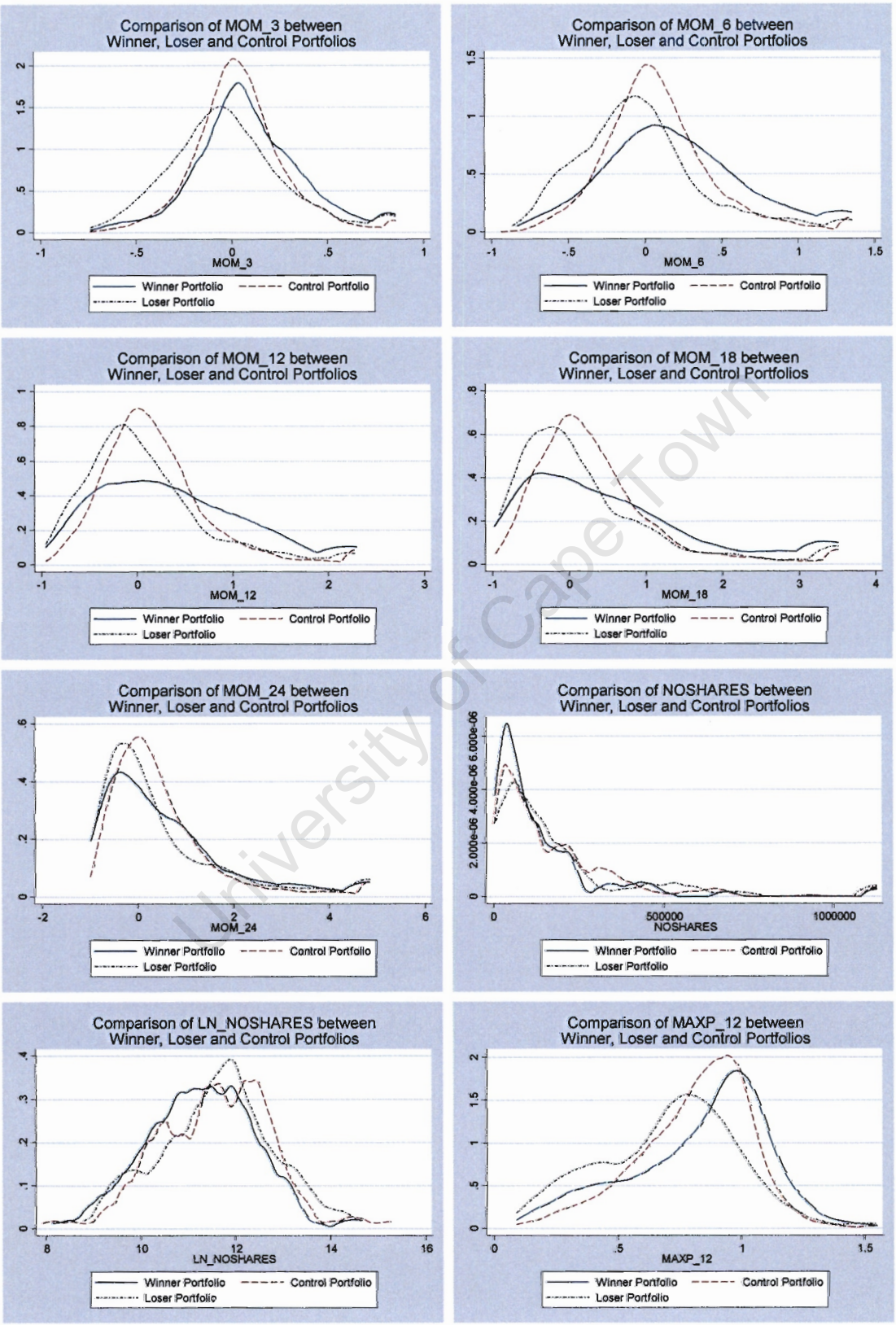

Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios

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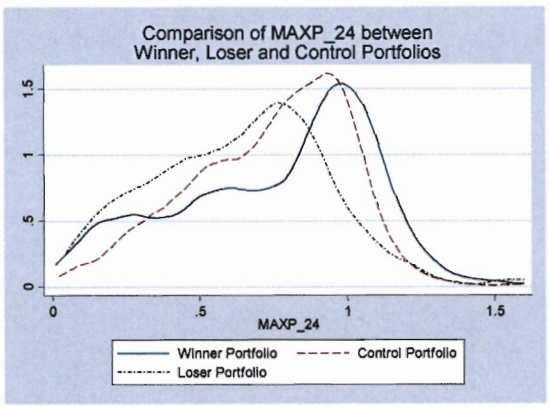
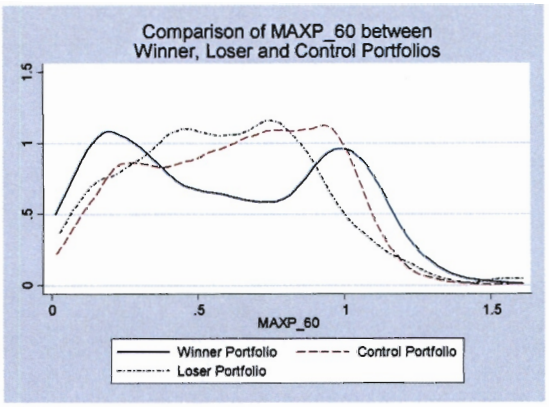
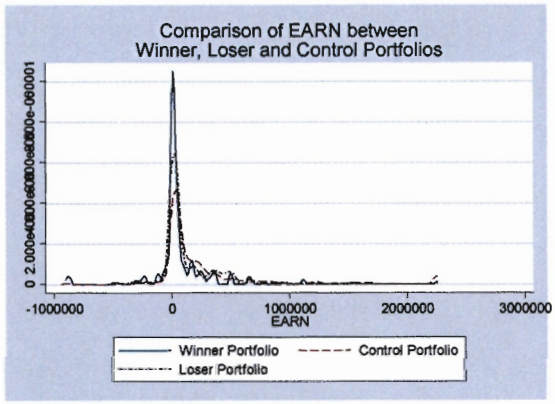
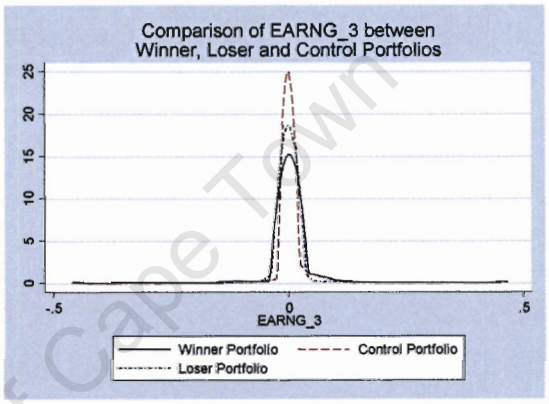
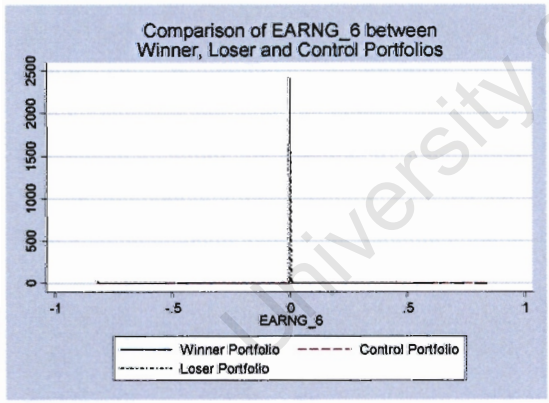
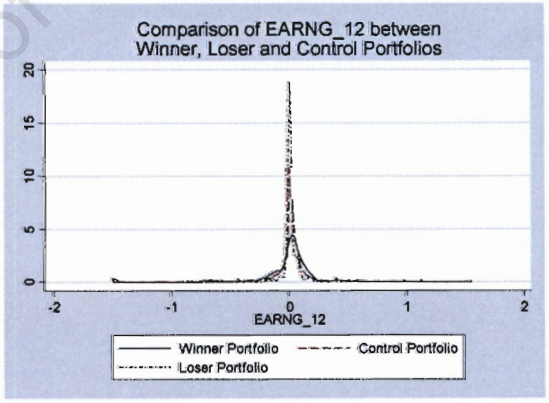


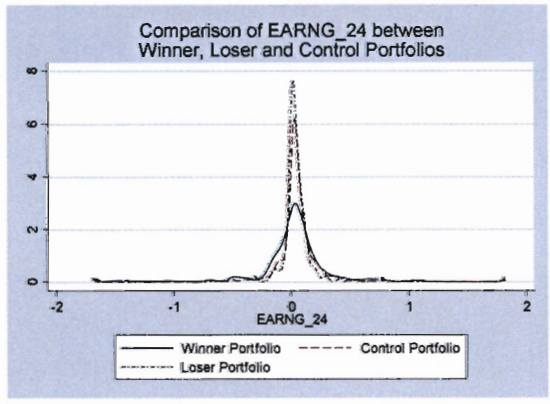


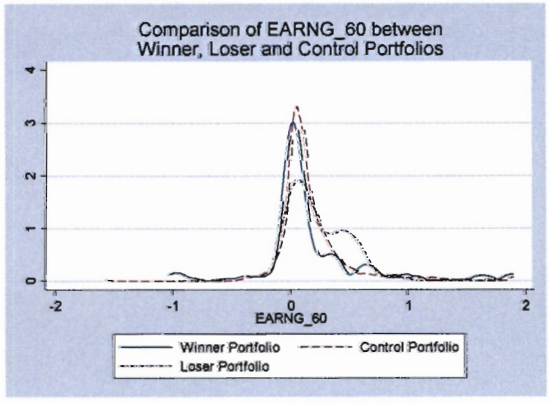






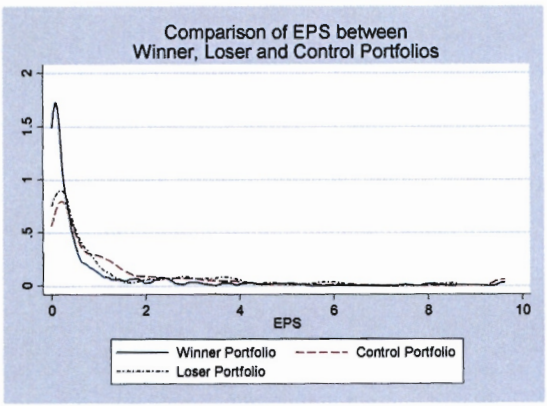


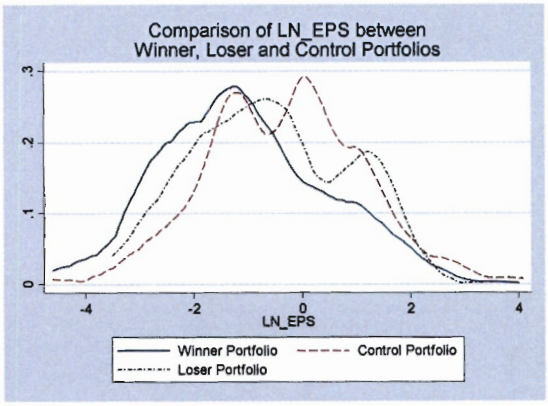


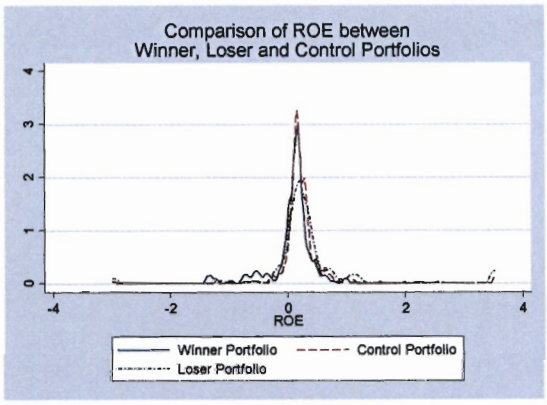


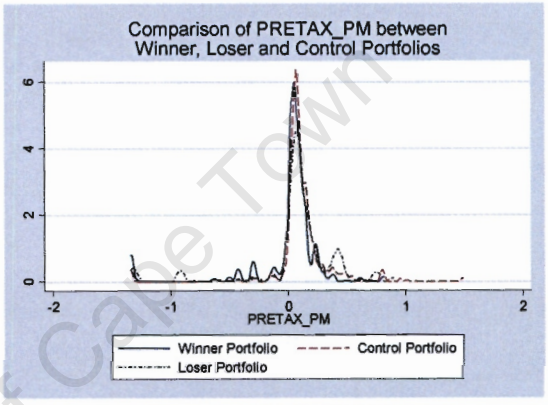
Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios

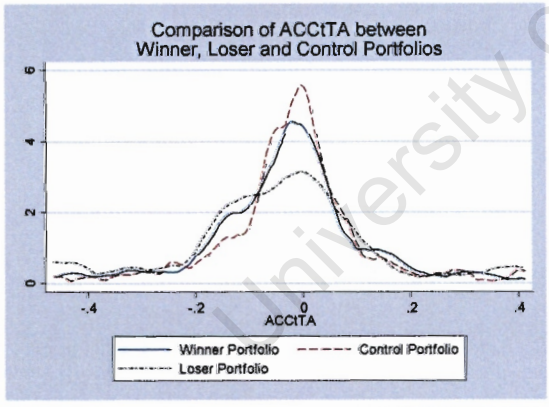
Continued.

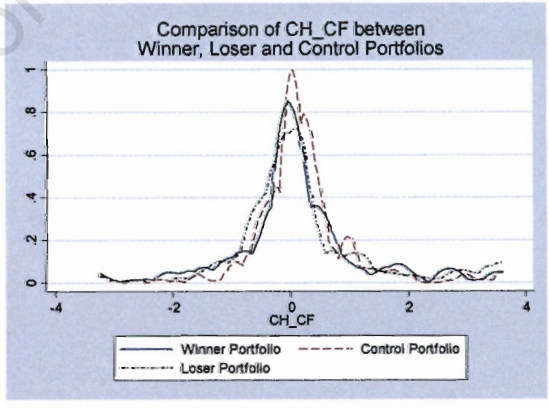


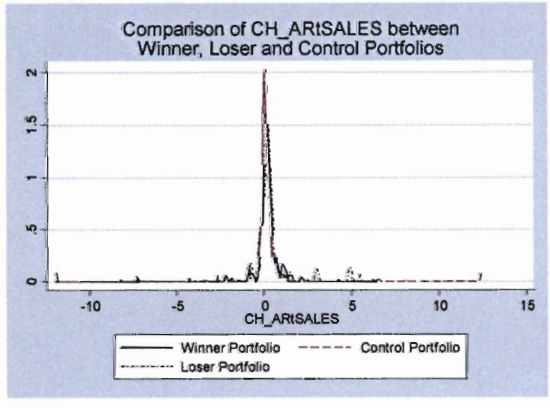


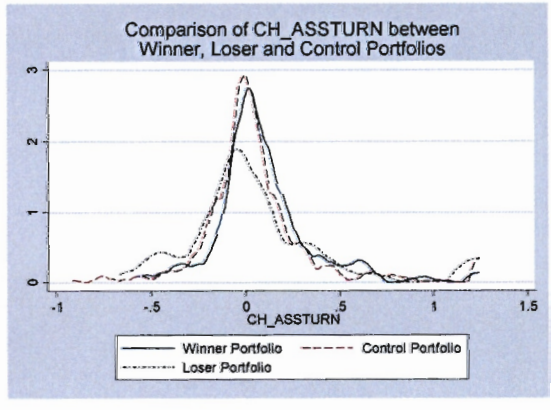












Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios

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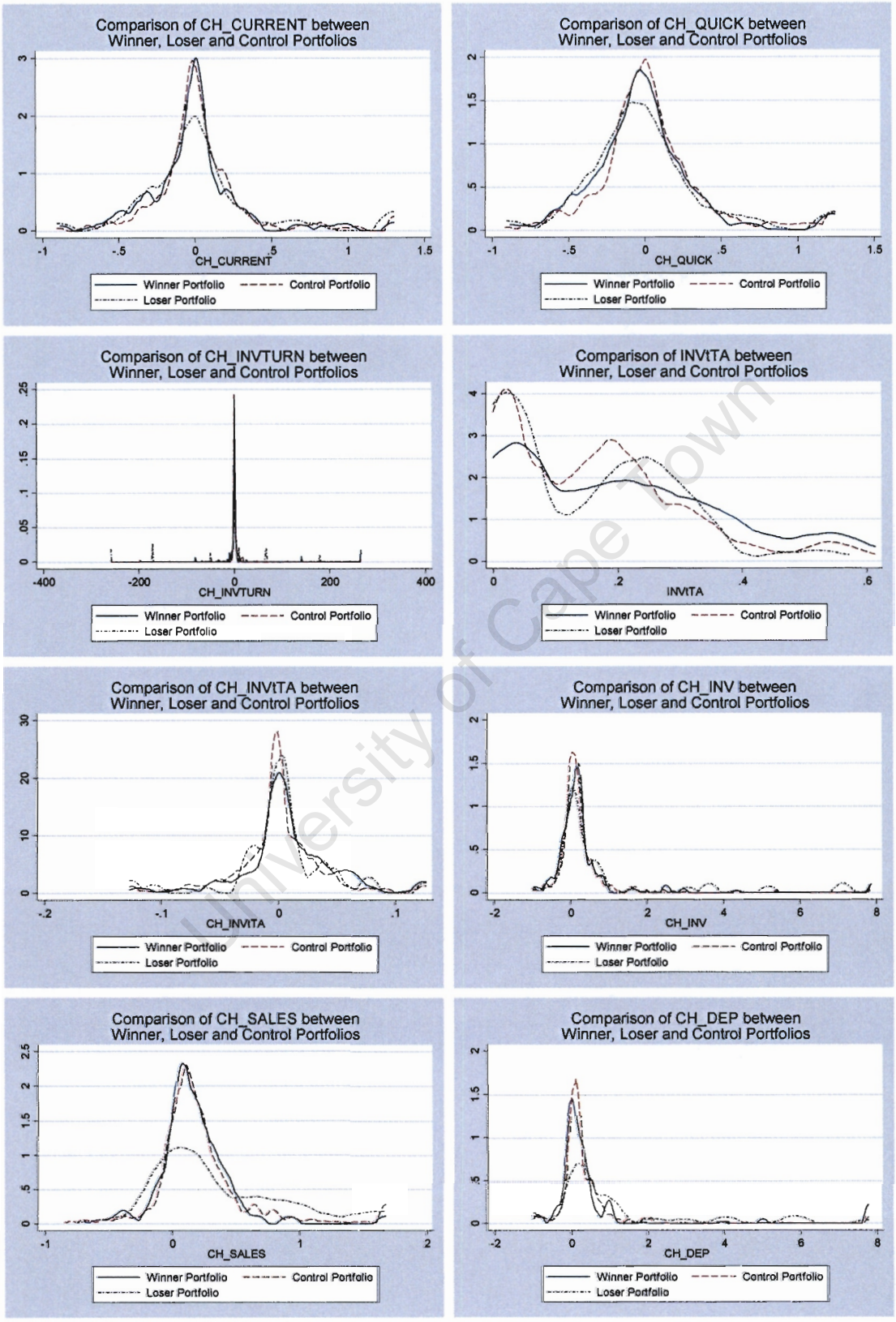
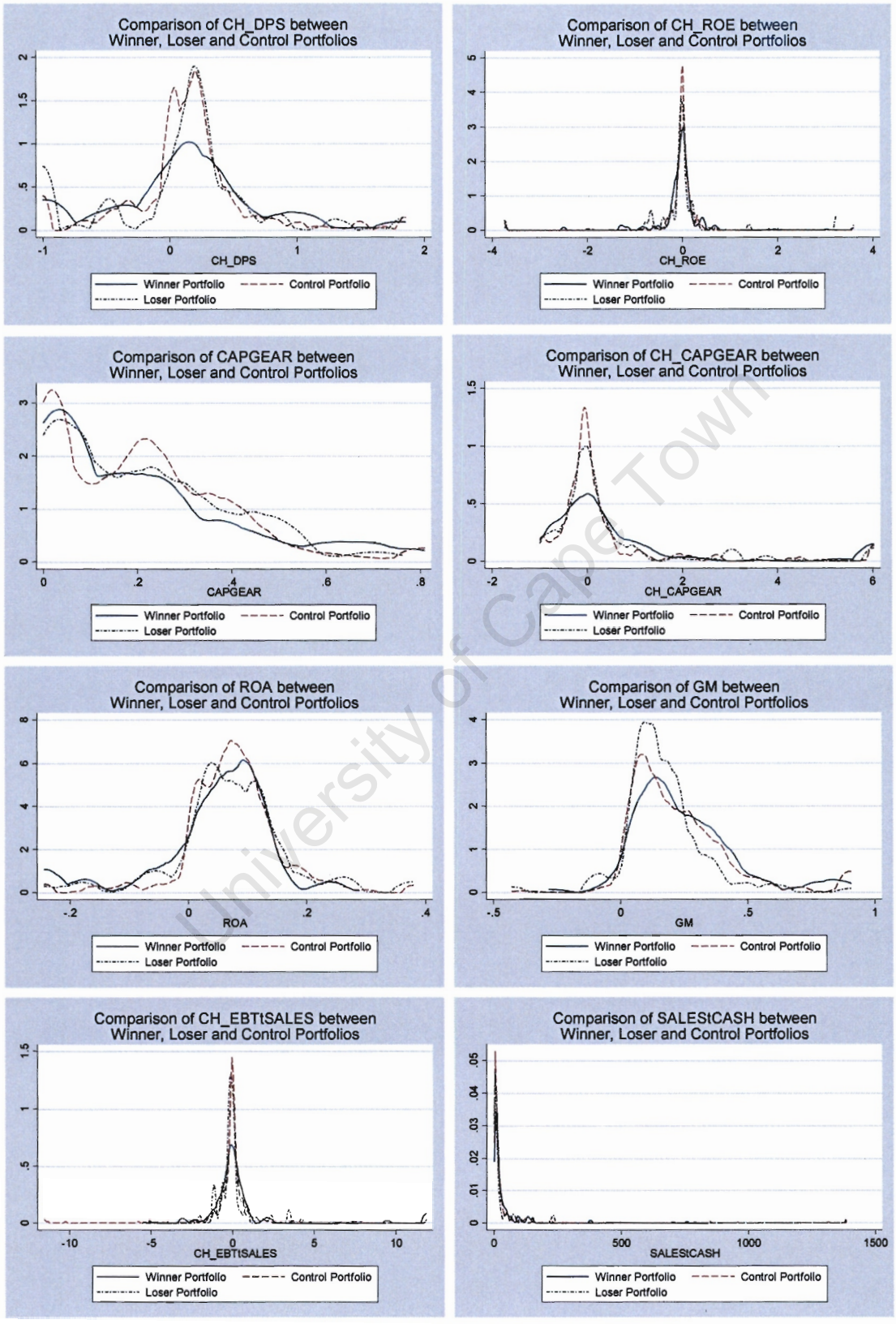


Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios Continued.



Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios

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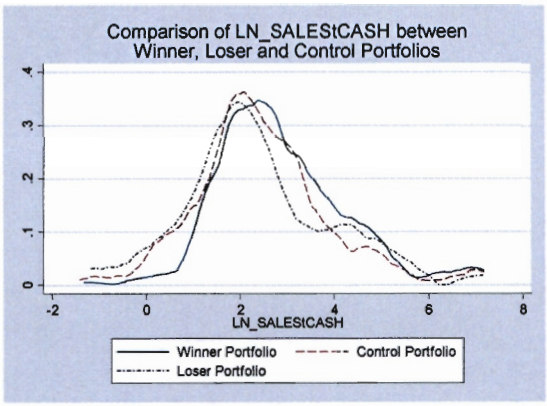

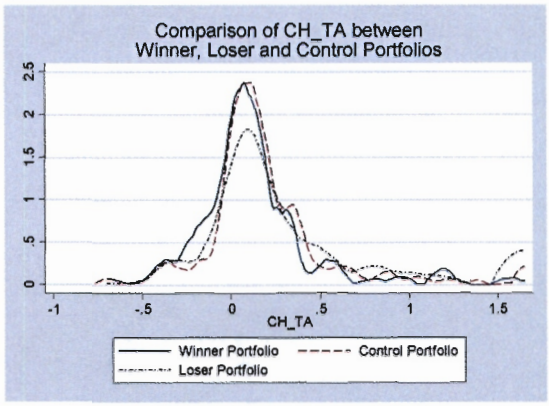

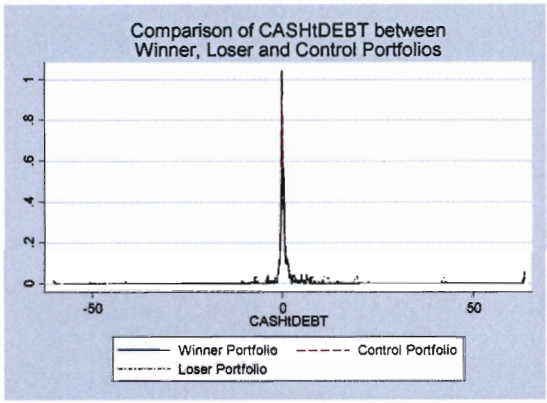

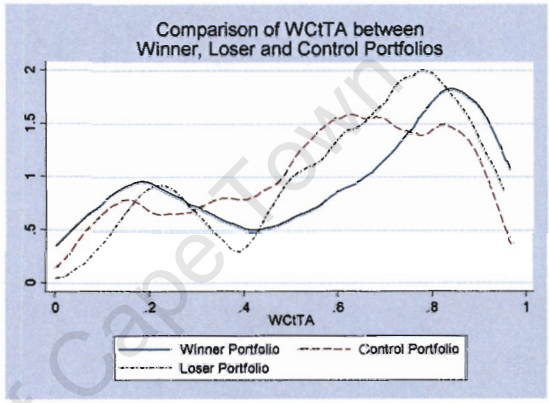

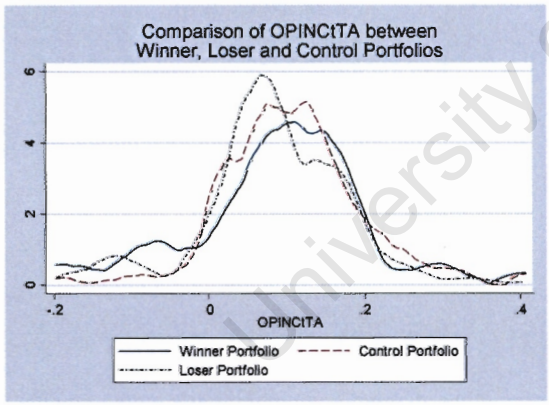

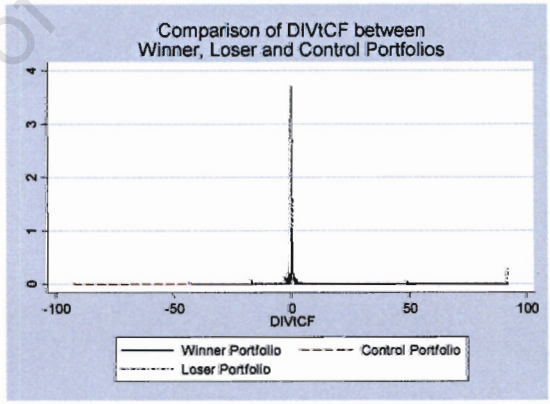

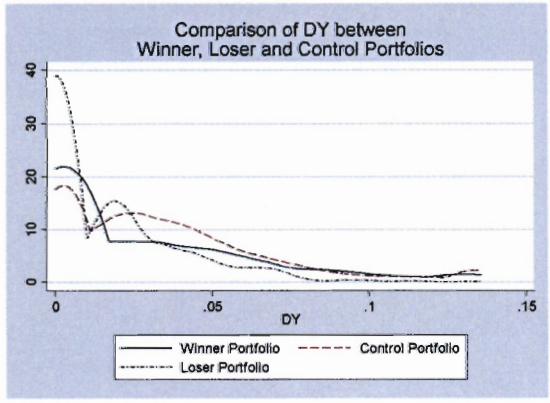

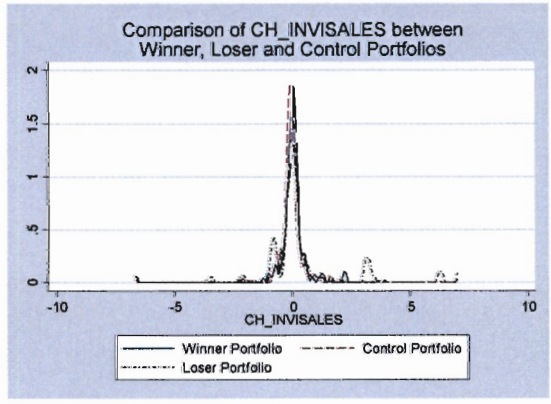

Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios

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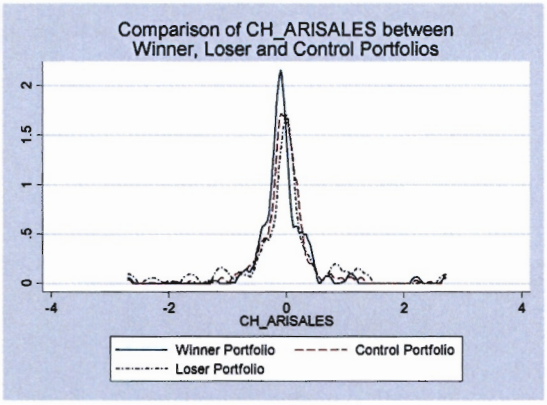
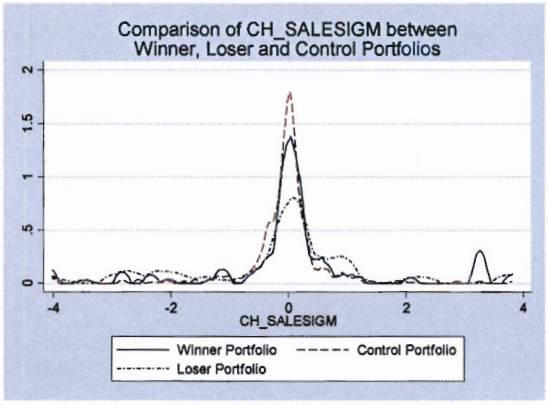
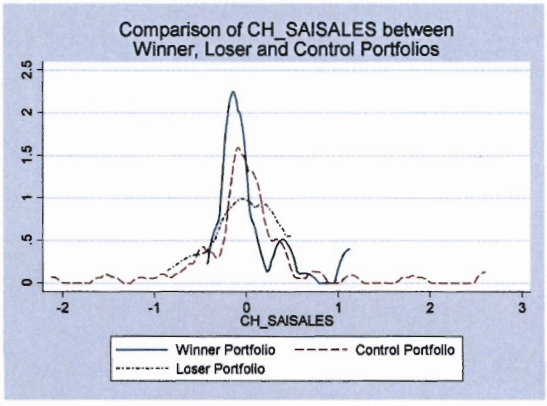
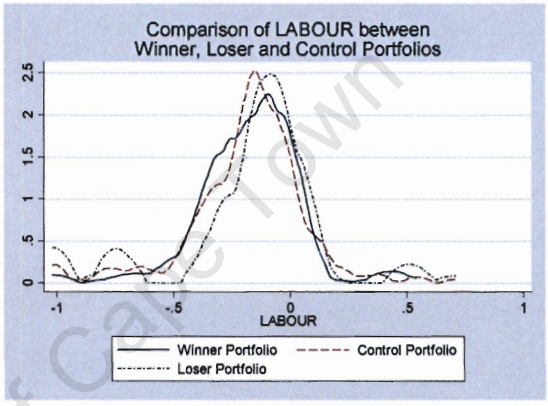
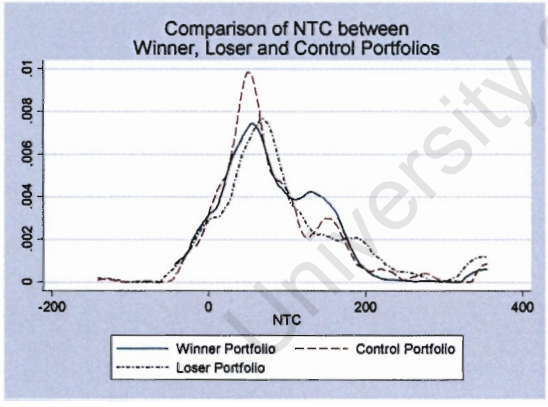
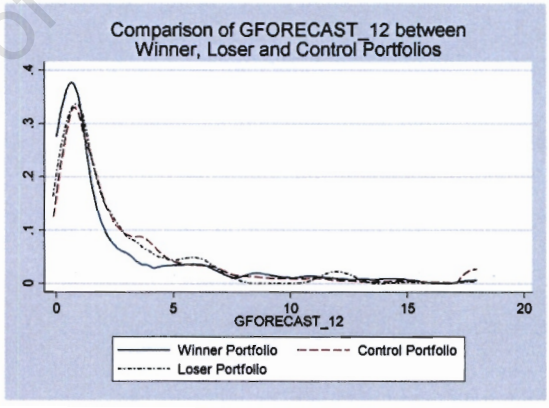


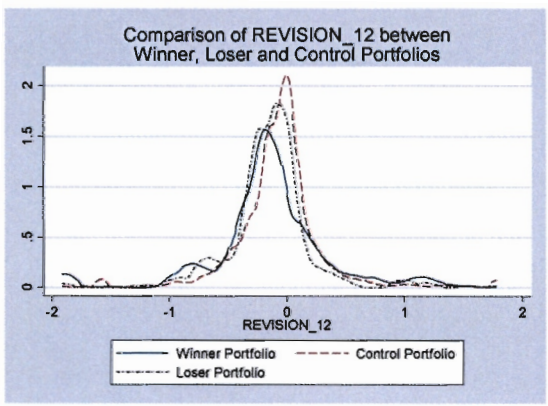


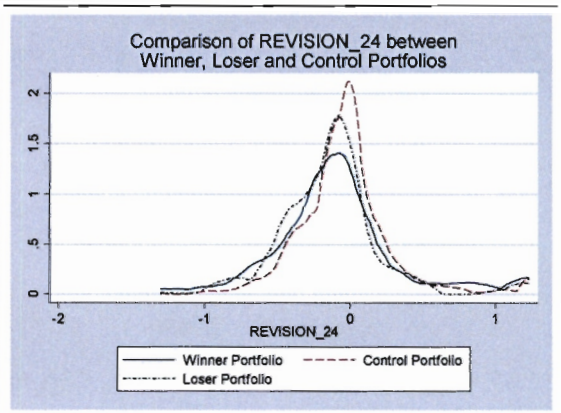




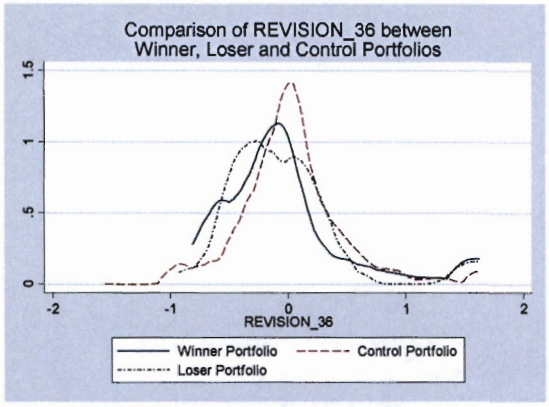


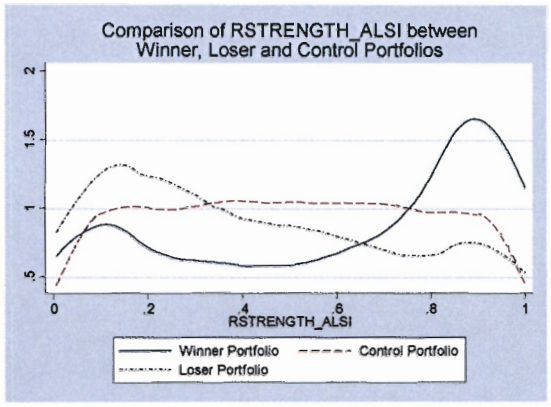


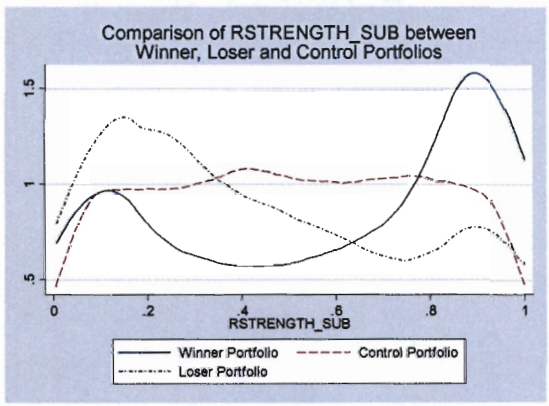


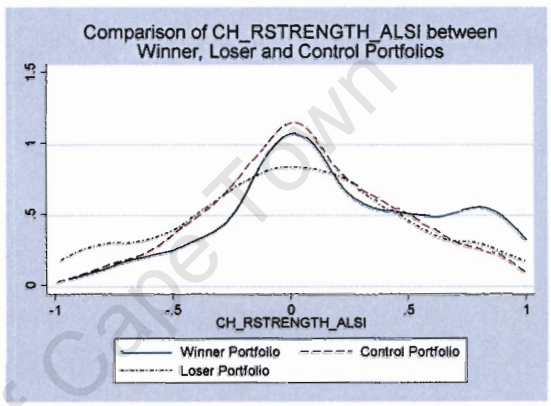


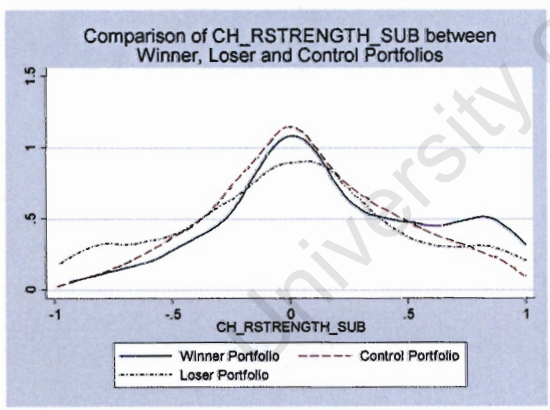
Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios Continued.

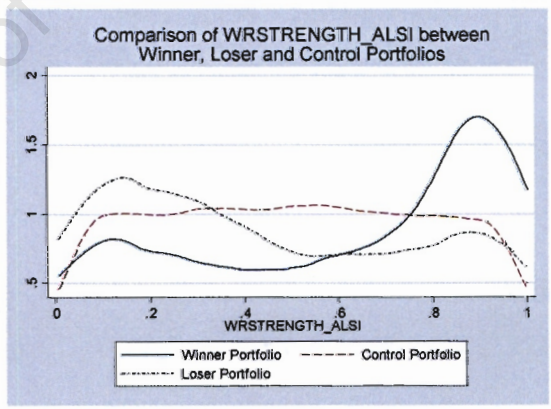


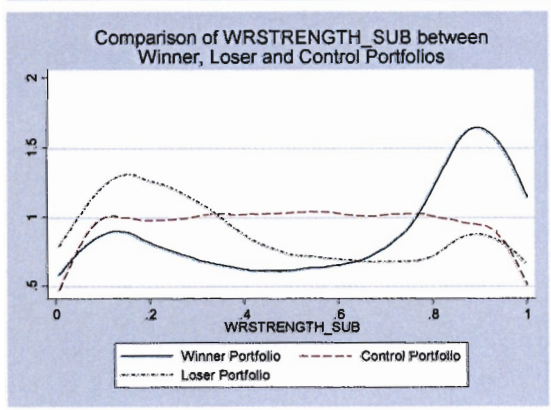


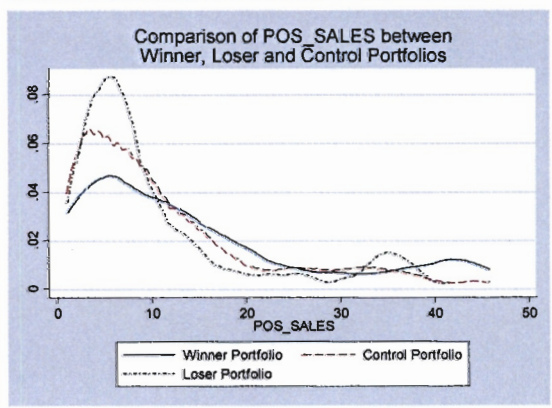




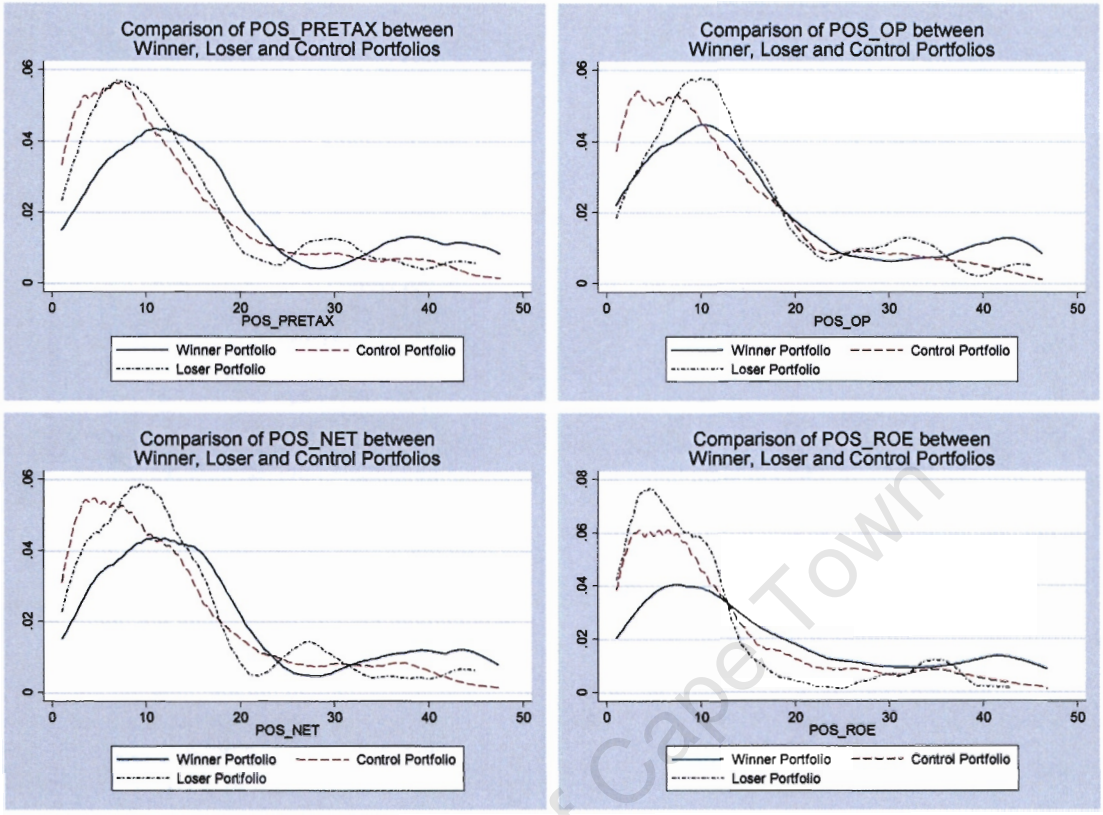








Appendix B.6. Variable Distributions between Winner, Loser and Control Portfolios Continued.



Appendix B.7. Results of Tests for Equal Variances

The table summarizes the results from an F-test for the equality of variance. This test compares both the variances of the winner and control portfolios and of the loser and control portfolios for each variable. The F-stat column shows the F-statistic for each of the equality of variances tests. The following three columns provide the p-values of the tests that the variance of the extreme performer portfolio is less than that of the control portfolio, the variances of the two portfolios are unequal and the variances of the extreme performer portfolio is greater than the control portfolio respectively.

The shaded cells highlight those cases where the assumption of equal variances is rejected at the 5% significance level and hence the relevant hypothesis is deemed to be true.

Variable	Winner vs Control				Loser vs Control			
	F-Stat	H_1: $\sigma^2(W) < \sigma^2(C)$	H_1: $\sigma^2(W) \neq \sigma^2(C)$	H_1: $\sigma^2(W) > \sigma^2(C)$	F-Stat	H_1: $\sigma^2(L) < \sigma^2(C)$	H_1: $\sigma^2(L) \neq \sigma^2(C)$	H_1: $\sigma^2(L) > \sigma^2(C)$
INST_OWN	1.0830	0.8167	0.3667	0.1833	2.3550	1.0000	0.0000	0.0000
MAN_OWN	0.9330	0.2296	0.4592	0.7704	1.1826	0.8315	0.3369	0.1685
PE	4.1057	1.0000	0.0000	0.0000	1.0813	0.9145	0.1711	0.0855
EY	1.9268	1.0000	0.0000	0.0000	0.5046	0.0000	0.0000	1.0000
MV	0.4453	0.0000	0.0000	1.0000	0.4341	0.0000	0.0000	1.0000
LN_MV	0.9607	0.1946	0.3891	0.8054	0.7179	0.0000	0.0000	1.0000
BETA	1.3085	1.0000	0.0000	0.0000	1.1047	0.9705	0.0590	0.0295
MTB	0.8042	0.0000	0.0001	1.0000	2.6018	1.0000	0.0000	0.0000
VOL_3	1.1957	0.9996	0.0009	0.0004	1.1239	0.9752	0.0496	0.0248
LN_VOL_3	1.1268	0.9863	0.0274	0.0137	0.9239	0.1030	0.2061	0.8970
VOL_6	1.1461	0.9949	0.0103	0.0051	1.0740	0.8858	0.2283	0.1142
LN_VOL_6	1.0794	0.9241	0.1518	0.0759	0.9170	0.0817	0.1634	0.9183
VOL_12	1.2279	1.0000	0.0001	0.0000	1.1145	0.9667	0.0665	0.0333
LN_VOL_12	1.1150	0.9798	0.0404	0.0202	0.9426	0.1700	0.3400	0.8300
VOL_18	1.2709	1.0000	0.0000	0.0000	1.0909	0.9292	0.1417	0.0708
LN_VOL_18	1.1337	0.9910	0.0179	0.0090	0.9514	0.2115	0.4230	0.7885
VOL_24	1.3089	1.0000	0.0000	0.0000	0.9539	0.2243	0.4486	0.7757
LN_VOL_24	1.1162	0.9808	0.0383	0.0192	0.9261	0.1075	0.2149	0.8925
SDEV_VOL	1.4124	1.0000	0.0000	0.0000	1.0927	0.9367	0.1267	0.0633
LN_SDEV_VOL	1.1452	0.9951	0.0097	0.0049	1.0019	0.5194	0.9612	0.4806
VOLtNOSHARES	1.8237	1.0000	0.0000	0.0000	0.6151	0.0000	0.0000	1.0000
LN_VOLtNOSHARES	1.0061	0.5507	0.8986	0.4493	0.9368	0.1448	0.2896	0.8552
AGE	0.9579	0.1777	0.3554	0.8223	0.9097	0.0428	0.0857	0.9572
MOM_1	1.3372	1.0000	0.0000	0.0000	1.6026	1.0000	0.0000	0.0000
MOM_3	1.4338	1.0000	0.0000	0.0000	1.7094	1.0000	0.0000	0.0000
MOM_6	1.7236	1.0000	0.0000	0.0000	1.4422	1.0000	0.0000	0.0000
MOM_12	1.9606	1.0000	0.0000	0.0000	1.3513	1.0000	0.0000	0.0000
MOM_18	2.1568	1.0000	0.0000	0.0000	1.5224	1.0000	0.0000	0.0000
MOM_24	1.5570	1.0000	0.0000	0.0000	1.5951	1.0000	0.0000	0.0000
NOSHARES	0.7464	0.0000	0.0000	1.0000	1.3506	1.0000	0.0000	0.0000
LN_NOSHARES	0.8675	0.0052	0.0104	0.9948	0.9319	0.1002	0.2004	0.8998
MAXP_12	1.5216	1.0000	0.0000	0.0000	1.4919	1.0000	0.0000	0.0000
MAXP_24	1.5193	1.0000	0.0000	0.0000	1.1995	0.9997	0.0005	0.0003
MAXP_60	1.4956	1.0000	0.0000	0.0000	1.0272	0.8961	0.6077	0.3039
EARN	0.3448	0.0000	0.0000	1.0000	0.1673	0.0000	0.0000	1.0000
EARNG_3	1.2261	0.9999	0.0001	0.0001	0.7613	0.0001	0.0002	0.9999
EARNG_6	1.9554	1.0000	0.0000	0.0000	0.4904	0.0000	0.0000	1.0000
EARNG_12	2.4452	1.0000	0.0000	0.0000	0.4226	0.0000	0.0000	1.0000
EARNG_24	2.0337	1.0000	0.0000	0.0000	0.2297	0.0000	0.0000	1.0000
EARNG_60	2.5080	1.0000	0.0000	0.0000	0.7451	0.0087	0.0174	0.9913
EPS	0.6272	0.0000	0.0000	1.0000	0.6762	0.0000	0.0000	1.0000
LN_EPS	1.1181	0.9870	0.0259	0.0130	0.8790	0.3651	0.7302	0.6349
ROE	0.9147	0.0655	0.1310	0.9345	3.2897	1.0000	0.0000	0.0000
PRETAX_PM	1.5299	1.0000	0.0000	0.0000	1.8843	1.0000	0.0000	0.0000
ACCtTA	1.1209	0.9849	0.0302	0.0151	1.9006	1.0000	0.0000	0.0000
CH_CF	1.5411	1.0000	0.0000	0.0000	1.6176	1.0000	0.0000	0.0000
CH_ARtSALES	0.1789	0.0000	0.0000	1.0000	0.4687	0.0000	0.0000	1.0000
CH_ASSTURN	0.8221	0.0008	0.0016	0.9992	1.8799	1.0000	0.0000	0.0000
CH_CURRENT	1.0530	0.8117	0.3766	0.1883	1.7794	1.0000	0.0000	0.0000
CH_QUICK	0.9714	0.3235	0.6470	0.6765	1.3440	0.9999	0.0003	0.0001
CH_INVTURN	2.3065	1.0000	0.0000	0.0000	4.0791	1.0000	0.0000	0.0000
INVtTA	1.3982	1.0000	0.0000	0.0000	0.9033	0.0799	0.1598	0.9201
CH_INVtTA	1.1865	0.9983	0.0035	0.0017	1.3222	0.9998	0.0003	0.0002
CH_INV	1.2025	0.9988	0.0023	0.0012	2.9066	1.0000	0.0000	0.0000
CH_SALES	0.5982	0.0000	0.0000	1.0000	2.0781	1.0000	0.0000	0.0000
CH_DEP	2.8078	1.0000	0.0000	0.0000	3.3364	1.0000	0.0000	0.0000
CH_DPS	1.7299	1.0000	0.0000	0.0000	1.5868	1.0000	0.0000	0.0000
CH_ROE	1.1119	0.9634	0.0732	0.0366	2.2782	1.0000	0.0000	0.0000
CAPGEAR	1.2958	1.0000	0.0000	0.0000	0.9494	0.2294	0.4587	0.7706
CH_CAPGEAR	1.9403	1.0000	0.0000	0.0000	1.1836	0.9847	0.0306	0.0153
ROA	1.5696	1.0000	0.0000	0.0000	1.5000	1.0000	0.0000	0.0000
GM	0.9618	0.4601	0.9203	0.5399	0.5716	0.0000	0.0000	1.0000
CH_EBTtSALES	2.1785	1.0000	0.0000	0.0000	0.5158	0.0000	0.0000	1.0000
SALEStCASH	0.4210	0.0000	0.0000	1.0000	1.2879	0.9999	0.0001	0.0001
LN_SALEStCASH	0.9379	0.1328	0.2656	0.8672	1.2261	0.9989	0.0023	0.0011
CH_TA	0.8383	0.0015	0.0031	0.9985	2.1552	1.0000	0.0000	0.0000
CASHtDEBT	1.1547	0.9929	0.0141	0.0071	1.9797	1.0000	0.0000	0.0000
WCtTA	1.4052	1.0000	0.0000	0.0000	0.9356	0.1881	0.3761	0.8119
OPINCtTA	1.6267	1.0000	0.0000	0.0000	1.0854	0.8867	0.2265	0.1133
DIVtCF	0.5681	0.0009	0.0000	1.0000	1.3674	0.9998	0.0005	0.0002
DY	1.1152	0.9922	0.0155	0.0078	0.4117	0.0000	0.0000	1.0000
CH_INVtSALES	0.8117	0.0007	0.0014	0.9993	3.2870	1.0000	0.0000	0.0000
CH_ARtSALES	0.8948	0.0410	0.0821	0.9590	2.2042	1.0000	0.0000	0.0000
CH_SALESIGM	2.2574	1.0000	0.0000	0.0000	2.6378	1.0000	0.0000	0.0000
CH_SAISALES	0.3647	0.0000	0.0000	1.0000	0.3127	0.0003	0.0005	0.9997
LABOUR	0.7532	0.0001	0.0003	0.9999	1.7161	1.0000	0.0000	0.0000
NTC	0.9677	0.2908	0.5812	0.7094	1.5485	1.0000	0.0000	0.0000
GFORECAST_12	0.8583	0.0202	0.0403	0.9798	0.5521	0.0000	0.0000	1.0000
REVISION_12	1.8695	1.0000	0.0000	0.0000	0.9665	0.3539	0.7078	0.6461
REVISION_24	1.9485	1.0000	0.0000	0.0000	1.2326	0.9923	0.0153	0.0077
REVISION_36	1.7656	1.0000	0.0000	0.0000	1.3943	0.9902	0.0197	0.0098
RSTRENGTH_ALSI	1.4119	1.0000	0.0000	0.0000	1.1984	0.9995	0.0010	0.0005
RSTRENGTH_SUB	1.4372	1.0000	0.0000	0.0000	1.2101	0.9997	0.0005	0.0003
CH_RSTRENGTH_ALSI	1.2593	1.0000	0.0000	0.0000	1.4411	1.0000	0.0000	0.0000
CH_RSTRENGTH_SUB	1.2461	1.0000	0.0000	0.0000	1.4661	1.0000	0.0000	0.0000
WRSTRENGTH_ALSI	1.3422	1.0000	0.0000	0.0000	1.2698	1.0000	0.0000	0.0000
WRSTRENGTH_SUB	1.3591	1.0000	0.0000	0.0000	1.2660	1.0000	0.0000	0.0000
POS_SALES	1.5701	1.0000	0.0000	0.0000	0.9562	0.2931	0.5862	0.7069
POS_PRETAX	1.5289	1.0000	0.0000	0.0000	1.0382	0.7158	0.5683	0.2842
POS_OP	1.5772	1.0000	0.0000	0.0000	1.0184	0.6126	0.7748	0.3874
POS_NET	1.4972	1.0000	0.0000	0.0000	0.9662	0.3156	0.6312	0.6844
POS_ROE	1.6499	1.0000	0.0000	0.0000	0.8213	0.0069	0.0138	0.9931

Appendix B.8. Average Correlation Matrix

The table below shows a matrix of the Pearson correlation coefficients between each of the 92 variables considered in this study over the period extending from January 1995 until December 2004. The correlations between each variable are calculated as a simple average of the Pearson correlation coefficients between the variables over the 120 months of this study. The highlighted cells indicate those variables for which the null hypothesis of perfect correlation cannot be rejected.

	INST_OWN	MAN_OWN	PE	EY	MV	LN_MV	BETA	MTB	VOL_3	LN_VOL_3	VOL_6	LN_VOL_6	VOL_12	LN_VOL_12	VOL_18	LN_VOL_18	VOL_24	LN_VOL_24	SDEV_VOL	LN_SDEV_VOL	VOLINOSHARES	LN_VOLINOSHARES	AGE	MOM_1
INST_OWN	1.00																							
MAN_OWN	0.10	1.00																						
PE	-0.08	0.00	1.00																					
EY	0.03	0.03	-0.57	1.00																				
MV	-0.02	0.04	0.13	-0.15	1.00																			
LN_MV	0.07	0.03	0.14	-0.22	0.74	1.00																		
BETA	-0.02	-0.04	0.19	-0.20	0.52	0.56	1.00																	
MTB	-0.09	-0.05	0.36	-0.34	0.19	0.30	0.13	1.00																
VOL_3	-0.02	0.03	-0.03	0.04	-0.09	-0.09	-0.08	-0.03	1.00															
LN_VOL_3	0.00	-0.02	0.01	0.00	0.06	0.05	0.04	0.02	0.67	1.00														
VOL_6	0.00	0.04	-0.03	0.03	-0.06	-0.08	-0.06	-0.02	0.79	0.62	1.00													
LN_VOL_6	0.02	-0.02	0.03	-0.02	0.11	0.09	0.08	0.03	0.54	0.89	0.67	1.00												
VOL_12	0.02	0.04	-0.02	0.01	-0.03	-0.05	-0.03	0.00	0.66	0.58	0.83	0.64	1.00											
LN_VOL_12	0.04	-0.01	0.03	-0.03	0.15	0.13	0.11	0.05	0.48	0.82	0.58	0.92	0.68	1.00										
VOL_18	0.04	0.06	-0.02	0.01	-0.01	-0.02	-0.01	0.00	0.62	0.57	0.77	0.63	0.93	0.67	1.00									
LN_VOL_18	0.05	0.00	0.03	-0.03	0.17	0.16	0.13	0.05	0.45	0.79	0.55	0.89	0.64	0.97	0.69	1.00								
VOL_24	0.04	0.06	-0.01	0.00	0.01	0.00	0.01	0.00	0.59	0.57	0.75	0.63	0.90	0.67	0.97	0.69	1.00							
LN_VOL_24	0.05	0.01	0.02	-0.03	0.18	0.17	0.15	0.05	0.44	0.78	0.53	0.87	0.62	0.94	0.67	0.98	0.69	1.00						
SDEV_VOL	0.03	0.03	-0.03	0.04	-0.06	-0.08	-0.05	0.00	0.23	0.02	0.35	0.12	0.45	0.21	0.44	0.22	0.41	0.21	1.00					
LN_SDEV_VOL	0.03	0.01	0.00	-0.01	0.09	0.08	0.08	0.01	0.21	0.07	0.31	0.27	0.43	0.42	0.44	0.43	0.43	0.42	0.67	1.00				
VOLINOSHARES	0.04	-0.01	0.07	-0.03	0.07	0.06	0.09	-0.02	0.35	0.39	0.45	0.43	0.51	0.45	0.54	0.46	0.56	0.47	0.24	0.27	1.00			
LN_VOLINOSHARES	0.07	-0.05	0.09	-0.08	0.22	0.22	0.24	0.02	0.31	0.62	0.39	0.69	0.44	0.74	0.48	0.78	0.50	0.77	0.16	0.30	0.66	1.00		
AGE	-0.07	0.03	0.03	-0.12	0.42	0.41	0.38	0.01	-0.05	0.03	-0.03	0.06	-0.02	0.09	0.00	0.11	0.01	0.12	-0.04	0.06	0.03	0.13	1.00	
MOM_1	0.00	0.02	0.09	-0.08	0.00	0.02	0.00	0.08	0.00	0.02	0.02	0.03	0.03	0.05	0.03	0.05	0.02	0.04	0.01	0.02	0.02	0.06	-0.02	1.00
MOM_3	-0.01	0.04	0.14	-0.13	0.00	0.02	0.01	0.14	-0.02	0.00	0.01	0.03	0.03	0.04	0.02	0.04	0.02	0.04	0.02	0.02	0.04	0.07	-0.03	0.55
MOM_6	-0.02	0.03	0.18	-0.14	0.00	0.02	0.00	0.17	-0.01	-0.01	-0.01	0.00	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.04	0.06	-0.04	0.40
MOM_12	-0.02	0.02	0.21	-0.13	0.01	0.03	0.01	0.22	-0.01	0.01	-0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	-0.01	-0.01	0.04	0.06	-0.04	0.31
MOM_18	-0.02	0.04	0.22	-0.10	0.03	0.05	0.02	0.28	0.00	0.01	-0.01	0.01	0.00	0.02	0.01	0.02	0.01	0.02	-0.01	0.00	0.04	0.05	-0.04	0.23
MOM_24	-0.04	0.05	0.19	-0.07	0.05	0.08	0.02	0.33	-0.01	0.01	-0.01	0.02	0.00	0.03	0.00	0.03	0.00	0.02	-0.03	0.00	0.02	0.04	-0.04	0.18
NOSHARES	0.03	-0.05	0.07	-0.11	0.32	0.43	0.15	0.14	-0.05	0.02	-0.04	0.05	-0.02	0.07	0.00	0.08	0.01	0.10	-0.03	0.05	-0.02	0.00	0.02	-0.03
LN_NOSHARES	0.04	-0.04	0.04	-0.12	0.39	0.52	0.18	0.19	-0.05	0.02	-0.04	0.05	-0.03	0.07	-0.01	0.08	0.01	0.09	-0.04	0.04	-0.07	-0.01	0.03	-0.04
MAXP_12	0.00	0.07	0.15	-0.13	0.10	0.19	0.00	0.20	-0.01	0.01	0.00	0.02	0.01	0.03	0.01	0.03	0.00	0.02	-0.01	-0.01	0.03	0.06	-0.02	0.50
MAXP_24	0.04	0.10	0.16	-0.10	0.15	0.26	0.01	0.26	-0.01	0.02	0.00	0.03	0.01	0.04	0.01	0.04	0.01	0.04	-0.02	0.01	0.02	0.06	-0.03	0.38
MAXP_60	-0.04	0.10	0.16	-0.12	0.24	0.39	0.07	0.32	-0.03	0.02	-0.02	0.04	-0.01	0.07	0.01	0.07	0.01	0.08	-0.03	0.04	0.04	0.12	-0.03	0.28
EARN	0.02	0.05	0.03	-0.07	0.84	0.68	0.38	0.07	-0.08	0.06	-0.05	0.10	-0.02	0.14	0.00	0.16	0.02	0.17	-0.05	0.09	0.05	0.18	0.46	-0.02
EARNG_3	0.02	0.02	0.03	-0.03	0.07	0.06	-0.02	0.02	0.00	0.00	-0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	-0.03	-0.01	-0.02	0.00	-0.01	0.07
EARNG_6	0.02	0.00	0.02	0.03	0.13	0.09	-0.03	0.03	-0.01	0.00	0.00	0.01	0.00	0.01	-0.01	0.01	-0.01	0.00	-0.02	0.01	-0.02	-0.01	-0.01	0.07
EARNG_12	0.07	0.01	0.03	0.10	0.11	0.10	-0.02	0.06	-0.01	0.01	-0.02	0.01	-0.01	0.02	-0.01	0.03	0.00	0.02	-0.01	0.04	-0.01	0.01	-0.06	0.04
EARNG_24	-0.01	0.08	0.03	0.15	0.17	0.13	0.00	0.08	-0.01	0.02	-0.01	0.03	0.01	0.05	0.02	0.06	0.03	0.07	0.01	0.05	0.02	0.06	-0.03	0.01
EARNG_60	0.00	0.11	0.04	0.09	0.20	0.19	0.06	0.17	-0.04	0.03	-0.03	0.03	-0.03	0.04	-0.01	0.05	0.02	0.07	-0.03	0.01	0.09	0.16	-0.11	0.02
EPS	0.10	0.10	-0.06	0.02	0.43	0.51	0.39	0.04	-0.05	0.03	-0.04	0.06	-0.02	0.09	0.00	0.11	0.01	0.12	-0.05	0.06	0.00	0.06	0.45	-0.02
LN_EPS	0.11	0.04	-0.19	-0.03	0.39	0.57	0.38	0.10	-0.05	0.04	-0.04	0.07	-0.01	0.10	0.02	0.13	0.03	0.14	-0.04	0.07	-0.01	0.05	0.50	-0.04
ROE	-0.02	0.13	0.02	0.10	0.04	0.08	0.00	0.33	0.00	0.03	0.00	0.02	0.01	0.02	0.01	0.02	0.01	0.02	-0.02	-0.01	0.05	0.04	-0.12	0.05
PRETAX_PM	0.05	0.04	-0.06	0.31	0.10	0.15	-0.03	0.00	-0.01	0.02	-0.01	0.02	0.01	0.03	0.01	0.04	0.01	0.04	-0.01	0.02	0.01	0.03	0.06	0.02
ACCITA	-0.02	-0.03	-0.02	0.05	0.02	0.02	-0.02	0.05	-0.03	-0.01	-0.01	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.05	0.04	-0.03	0.01
CH_CF	0.02	0.07	0.04	0.07	0.01	0.07	0.04	0.12	-0.01	0.01	0.01	0.02	0.01	0.03	0.03	0.03	0.03	0.04	-0.02	0.01	0.05	0.07	-0.02	0.02
CH_ARISALES	0.04	0.02	-0.01	0.03	-0.04	-0.05	-0.07	0.00	0.00	0.01	0.02	0.02	0.03	0.02	0.03	0.03	0.04	0.03	0.03	0.05	0.03	0.01	-0.06	-0.01
CH_ASSTURN	0.03	-0.07	0.00	0.04	-0.04	-0.06	-0.04	-0.02	-0.03	-0.02	-0.02	-0.01	-0.03	-0.03	-0.04	-0.04	-0.04	-0.04	0.00	-0.03	-0.02	-0.02	-0.07	0.01
CH_CURRENT	-0.05	-0.02	0.05	0.03	0.00	0.02	-0.05	0.03	-0.03	-0.01	-0.02	-0.01	-0.01	0.00	-0.01	0.00	0.00	0.00	-0.02	-0.01	0.05	0.04	-0.01	0.03
CH_QUICK	-0.04	-0.04	0.06	0.01	0.01	0.01	-0.05	0.04	-0.02	-0.01	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.05	0.04	-0.01	0.04
CH_INVTURN	0.08	0.04	0.00	0.01	-0.01	-0.02	-0.02	0.00	-0.01	0.00	-0.01	-0.01	-0.02	-0.01	-0.03	-0.03	-0.04	-0.05	-0.02	-0.03	-0.05	-0.03	0.01	-0.01
INVITA	-0.05	0.14	-0.20	0.13	-0.17	-0.15	-0.10	-0.08	0.03	-0.02	0.02	-0.04	-0.01	-0.06	-0.02	-0.07	-0.03	-0.07	0.01	-0.03	-0.09	-0.15	0.00	0.02
CH_INVITA	0.08	0.04	0.00	-0.03	-0.01	0.00	-0.01	-0.03	0.01	0.00	0.00	-0.01	0.00	-0.01	0.01	-0.01	0.01	0.00	0.02	0.02	0.02	0.01	-0.04	-0.01
CH_INV	-0.01	0.03	0.13	-0.12	0.06	0.06	0.03	0.09	0.01	0.03	0.01	0.04	0.02	0.05	0.05	0.07	0.05	0.08	0.00	0.04	0.07	0.08	-0.11	0.02
CH_SALES	-0.01	-0.04	0.17	-0.06	0.04	0.07	0.03	0.20	0.01	0.01	0.00	0.02	0.02	0.04	0.03	0.05	0.03	0.05	0.01	0.04	0.03	0.03	-0.18	0.02
CH_DEP	-0.08	-0.05	0.12	-0.13	0.03	0.03	0.09	0.10	-0.01	0.01	-0.01	0.02	0.04	0.05	0.05	0.07	0.05	0.08	0.03	0.06	0.07	0.08	-0.11	-0.02
CH_DPS	-0.01	-0.03	-0.12	0.06	0.08	0.13	0.05	0.17	0.00	0.02	0.00	0.02	-0.01	0.02	-0.01	0.02	-0.01	0.02	0.00	0.00	0.00	0.02	0.02	0.06
CH_ROE	0.02	0.05	0.02	0.07	0.01	0.00	0.01	-0.02	0.02	0.01	0.00	-0.02	-0.01	-0.03	-0.01	-0.02	0.00	-0.02	-0.02	-0.03	-0.02	-0.01	0.02	0.08
CAPGEAR	-0.02	-0.09	-0.02	-0.11	0.08	0.07	-0.02	0.09	0.00	0.00	-0.01	0.00	-0.01	0.01	0.00	0.02	0.00	0.02	-0.02	0.00	-0.03	-0.01	0.02	-0.03
CH_CAPGEAR	0.01	0.02	0.04	-0.08	-0.01	-0.03	0.03	0.03	0.01	0.00	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.01	-0.04	-0.03	0.00	-0.01	-0.07	-0.01
ROA	-0.04	0.14	-0.08	0.22	0.01	0.08	0.03	0.21	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.02	0.03
GM	0.03	0.19	-0.05	0.24	0.00	-0.08	-0.23	-0.02	0.03	0.01	0.01	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	-0.01	-0.02	-0.04	0.01	0.01
CH_EBTISALES	0.02	0.03	-0.02	0.06	0.04	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.00	0.02	0.03	0.00	-0.05	0.02
SALESICASH	-0.05	-0.02	-0.03	0.03	-0.11	-0.13	-0.05	0.08	0.00	-0.02	0.01	-0.03	0.00	-0.04	-0.01	-0.04	-0.01	-0.03	0.03	-0.01	-0.05	-0.08	-0.04	-0.01
LN_SALESICASH	0.01	-0.04	-0.10	0.03	-0.19	-0.17	-0.03	0.03	0.01	-0.01	0.01	-0.02	0.00	-0.03	0.00	-0.03	-0.01	-0.03	0.03	-0.01	-0.06	-0.09	0.01	0.01
CH_TA	-0.05	0.02	0.12	-0.07	0.05	0.10	0.04	0.18	0.02	0.03	0.03	0.03	0.04	0.05	0.06	0.06	0.05	0.06	0.01	0.04	0.04	0.05	-0.17	0.00
CASHIDEBT	-0.13	0.06	0.14	-0.06	0.02	0.01	0.03	0.08	0.01	0.01	0.01	0.01	0.02	0.03	0.03	0.05	0.04	0.05	0.04	0.02	-0.06	-0.03	-0.01	0.04
WCITA	0.03	0.09	-0.09	0.14	-0.23	-0.18	-0.16	0.03	0.02	-0.02	0.01	-0.05	-0.02	-0.08	-0.03	-0.09	-0.04	-0.10	-0.01	-0.07	-0.06	-0.09	-0.22	0.04
OPINCITA	-0.04	0.16	-0.11	0.21	-0.05	0.04	0.04	0.21	0.02	0.00	0.02	-0.01	0.01	-0.03	0.00	-0.04	0.00	-0.04	0.00	-0.03	-0.01	-0.04	0.01	0.03
DIVICF	-0.02	-0.05	0.03	-0.05	-0.03	0.02	-0.01	0.01	-0.02	-0.02	-0.02	-0.03	0.02	-0.03	0.00	-0.05	-0.01	-0.03	-0.02	-0.04	0.00	-0.02	0.00	-0.03	-0.02	0.00
DY	0.05	0.05	-0.33	0.45	-0.07	-0.10	-0.19	-0.28	0.03	-0.01	0.02	-0.03	0.00	-0.05	-0.01	-0.06	-0.01	-0.06	0.00	-0.04	-0.06	-0.10	0.07	-0.05
CH_INVISALES	0.03	0.05	0.02	-0.09	0.05	0.06	0.07	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.03	0.02	0.03	0.03	0.00	0.02	0.02	0.02	0.01	0.01
CH_ARISALES	0.01	0.05	0.05	-0.05	0.01	0.02	0.07	-0.03	0.01	0.01	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.01	0.03	0.02	0.03	0.05	0.01
CH_SALESIGM	-0.08	-0.07	0.17	-0.17	0.00	-0.04	0.01	0.09	-0.01	0.01	0.01	0.00	0.00	0.00	-0.01	-0.01	-0.02	-0.02	0.02	-0.01	0.01	0.01	-0.02	0.02
CH_SAISALES	-0.14	-0.23	-0.33	0.22	-0.21	-0.29	-0.28	-0.28	-0.03	-0.04	-0.02	-0.03	0.02	-0.01	0.02	0.00	0.02	0.00	0.12	0.13	0.06	0.05	-0.06	-0.06
LABOUR	-0.07	-0.07	0.01	-0.07	-0.01	0.00	-0.05	0.00	0.01	0.01	0.02	0.00	0.01	0.00	0.02	0.01	0.02	0.02	-0.02	0.00	0.01	-0.01	0.02	-0.01
NTC	0.06	0.14	-0.11	0.07	-0.17	-0.16	-0.23	0.03	0.00	-0.02	0.01	-0.03	0.00	-0.05	-0.01	-0.05	-0.01	-0.05	0.01	-0.04	-0.02	-0.05	-0.16	-0.02
GFORECAST_12	-0.05	0.23	0.03	-0.09	0.48	0.54	0.44	0.04	-0.07	0.05	-0.04	0.10	-0.01	0.13	0.01	0.15	0.02	0.15	-0.03	0.09	0.04	0.14	0.57	-0.03
REVISION_12	0.04	0.07	0.12	-0.01	0.16	0.19	0.04	0.20	-0.02	0.01	-0.01	0.02	0.00	0.04	0.02	0.05	0.02	0.04	0.00	0.03	0.01	0.02	-0.02	0.06
REVISION_24	0.04	0.04	0.20	-0.11	0.17	0.21	0.04	0.29	-0.01	0.04	-0.02	0.03	0.00	0.04	0.00	0.04	0.00	0.03	-0.03	-0.01	-0.01	0.03	-0.02	0.09
REVISION_36	0.20	0.06	0.23	-0.17	0.16	0.22	0.03	0.29	0.05	0.09	0.10	0.14	0.06	0.12	0.04	0.08	0.06	0.10	-0.04	0.01	0.06	0.11	-0.10	0.09
RSTRENGTH_ALSI	0.00	0.02	0.17	-0.13	0.03	0.06	-0.01	0.20	-0.01	0.00	-0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	-0.02	-0.02	0.03	0.05	-0.05	0.31
RSTRENGTH_SUB	-0.02	0.00	0.19	-0.14	0.05	0.08	0.03	0.18	-0.01	0.00	-0.02	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.02	-0.02	0.02	0.04	-0.02	0.30
CH_RSTRENGTH_ALSI	0.00	-0.05	0.07	-0.09	-0.06	-0.06	-0.03	0.01	0.00	-0.02	-0.01	-0.03	0.00	-0.03	-0.01	-0.03	-0.01	-0.03	-0.01	-0.04	0.01	0.00	-0.10	0.23
CH_RSTRENGTH_SUB	-0.01	-0.05	0.09	-0.10	-0.04	-0.04	0.00	0.02	-0.01	-0.02	-0.01	-0.03	-0.01	-0.03	-0.02	-0.04	-0.02	-0.04	-0.01	-0.05	0.01	0.00	-0.08	0.22
WRSTRENGTH_ALSI	0.01	0.01	0.18	-0.15	0.00	0.02	-0.01	0.18	-0.01	0.00	-0.01	0.01	0.01	0.02	0.01	0.02	0.00	0.01	0.00	0.00	0.04	0.06	-0.06	0.40
WRSTRENGTH_SUB	-0.01	-0.02	0.19	-0.16	0.02	0.03	0.02	0.17	-0.02	0.00	-0.01	0.00	0.00	0.01	0.00	0.01	-0.01	0.01	-0.01	-0.01	0.04	0.06	-0.03	0.39
POS_SALES	0.03	0.00	-0.10	0.03	-0.01	-0.06	-0.05	-0.12	0.00	-0.01	0.00	-0.02	0.00	-0.02	-0.01	-0.02	0.00	-0.02	0.01	0.00	-0.02	-0.02	0.15	0.00
POS_PRETAX	0.02	-0.08	0.01	-0.10	0.01	-0.14	-0.03	-0.07	-0.01	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.02	0.03	0.01	-0.06	-0.03	0.03	0.00
POS_OP	0.01	-0.12	0.02	-0.10	0.03	-0.12	-0.04	-0.09	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.02	0.03	0.02	-0.05	-0.02	0.05	-0.01
POS_NET	0.03	-0.09	0.00	-0.10	0.02	-0.12	-0.03	-0.08	-0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.01	0.02	0.01	-0.06	-0.04	0.02	0.00
POS_ROE	0.04	-0.05	-0.02	-0.08	0.01	-0.07	-0.09	-0.27	0.01	-0.02	0.01	-0.02	0.00	-0.02	0.00	-0.02	0.00	-0.02	0.02	0.01	0.00	-0.01	0.08	-0.01

Appendix B.8. Average Correlation Matrix

Continued.

	MOM_3	MOM_6	MOM_12	MOM_18	MOM_24	NOSHARES	LN_NOSHARES	MAXP_12	MAXP_24	MAXP_60	EARN	EARNG_3	EARNG_6	EARNG_12	EARNG_24	EARNG_60	EPS	LN_EPS	ROE	PRETAX_PM	ACCITA	CH_CF	CH_ARISALES	CH_ASSTURN
INST_OWN																								
MAN_OWN																								
PE																								
EY																								
MV																								
LN_MV																								
BETA																								
MTB																								
VOL_3																								
LN_VOL_3																								
VOL_6																								
LN_VOL_6																								
VOL_12																								
LN_VOL_12																								
VOL_18																								
LN_VOL_18																								
VOL_24																								
LN_VOL_24																								
SDEV_VOL																								
LN_SDEV_VOL																								
VOLINOSHARES																								
LN_VOLINOSHARES																								
AGE																								
MOM_1																								
MOM_3	1.00																							
MOM_6	0.69	1.00																						
MOM_12	0.51	0.72	1.00																					
MOM_18	0.40	0.57	0.81	1.00																				
MOM_24	0.31	0.45	0.68	0.85	1.00																			
NOSHARES	-0.05	-0.05	-0.04	-0.02	0.01	1.00																		
LN_NOSHARES	-0.06	-0.08	-0.09	-0.07	-0.04	0.84	1.00																	
MAXP_12	0.65	0.73	0.69	0.55	0.44	-0.05	-0.05	1.00																
MAXP_24	0.52	0.61	0.68	0.66	0.58	-0.02	-0.02	0.87	1.00															
MAXP_60	0.38	0.45	0.52	0.55	0.55	0.02	0.03	0.69	0.82	1.00														
EARN	-0.04	-0.05	-0.04	-0.04	-0.03	0.25	0.30	0.08	0.12	0.19	1.00													
EARNG_3	0.07	0.09	0.11	0.11	0.08	0.10	0.08	0.12	0.11	0.10	0.13	1.00												
EARNG_6	0.10	0.14	0.14	0.14	0.11	0.08	0.10	0.18	0.15	0.13	0.19	0.62	1.00											
EARNG_12	0.04	0.08	0.16	0.17	0.15	0.09	0.13	0.14	0.16	0.13	0.20	0.34	0.61	1.00										
EARNG_24	0.01	0.02	0.08	0.17	0.24	0.18	0.21	0.07	0.14	0.17	0.23	0.28	0.41	0.64	1.00									
EARNG_60	0.04	0.07	0.12	0.16	0.18	0.41	0.37	0.09	0.13	0.23	0.22	0.19	0.26	0.40	0.51	1.00								
EPS	-0.04	-0.06	-0.05	-0.03	-0.01	-0.09	-0.07	0.05	0.09	0.15	0.56	-0.02	-0.02	-0.04	-0.05	-0.12	1.00							
LN_EPS	-0.06	-0.08	-0.09	-0.07	-0.04	-0.11	-0.10	0.03	0.07	0.15	0.51	-0.03	-0.03	-0.10	-0.14	-0.19	0.81	1.00						
ROE	0.07	0.08	0.13	0.21	0.26	0.12	0.13	0.16	0.21	0.25	0.11	0.15	0.21	0.32	0.39	0.43	-0.04	-0.11	1.00					
PRETAX_PM	0.01	0.01	0.02	0.03	0.03	0.08	0.08	0.09	0.12	0.15	0.20	0.11	0.18	0.23	0.27	0.27	0.09	0.09	0.32	1.00				
ACCITA	0.00	-0.02	-0.04	-0.03	-0.01	0.00	0.03	0.00	0.00	-0.01	0.01	0.00	-0.01	-0.02	0.11	0.01	0.00	-0.03	0.20	0.04	1.00			
CH_CF	0.03	0.05	0.12	0.19	0.21	0.00	0.01	0.11	0.18	0.21	0.04	0.09	0.10	0.14	0.04	0.12	0.04	0.03	0.15	0.15	-0.02	1.00		
CH_ARISALES	-0.01	-0.01	-0.01	0.00	0.00	-0.01	-0.01	0.00	0.01	0.02	-0.03	-0.01	-0.01	-0.02	0.06	0.02	-0.02	-0.04	0.03	0.09	0.07	0.03	1.00	
CH_ASSTURN	0.02	0.03	0.02	-0.01	-0.03	0.00	0.00	0.01	0.00	-0.02	-0.06	0.01	0.01	-0.03	-0.13	0.04	-0.02	-0.03	-0.19	-0.06	-0.04	0.00	-0.11	1.00
CH_CURRENT	0.05	0.06	0.06	0.04	0.01	0.02	0.03	0.08	0.04	0.02	-0.01	0.08	0.10	0.12	0.12	0.04	-0.02	-0.05	0.20	0.10	0.52	0.04	0.06	0.04
CH_QUICK	0.08	0.10	0.11	0.08	0.04	0.00	0.00	0.11	0.06	0.04	-0.03	0.06	0.09	0.12	0.12	0.03	-0.02	-0.04	0.18	0.05	0.39	0.03	0.10	0.04
CH_INVTURN	-0.02	-0.02	0.00	0.02	0.03	0.03	0.03	-0.03	-0.03	-0.07	0.03	0.03	0.06	0.10	0.00	0.10	-0.03	-0.05	0.00	0.07	-0.06	0.01	-0.23	0.20
INVITA	0.03	0.05	0.04	0.06	0.05	-0.22	-0.22	0.09	0.09	0.06	-0.11	0.00	0.00	-0.02	-0.02	-0.11	-0.03	0.06	0.09	-0.23	0.14	0.02	-0.01	0.02
CH_INVITA	-0.03	-0.06	-0.12	-0.10	-0.07	-0.01	0.00	-0.06	-0.05	-0.04	-0.05	-0.04	-0.09	-0.16	-0.12	-0.10	0.03	0.01	-0.09	-0.08	0.12	0.02	0.00	0.24
CH_INV	0.02	0.02	0.01	0.04	0.09	0.07	0.06	0.03	0.03	0.10	0.00	0.02	0.00	-0.02	0.07	0.07	0.04	-0.05	0.18	0.01	0.12	0.07	0.20	-0.14
CH_SALES	0.02	0.05	0.08	0.12	0.18	0.10	0.10	0.09	0.15	0.20	0.01	0.09	0.11	0.15	0.14	0.26	-0.05	-0.08	0.25	0.10	0.07	0.18	-0.03	0.43
CH_DEP	-0.03	-0.05	-0.06	-0.04	0.00	0.11	0.11	-0.06	-0.03	0.01	-0.05	-0.02	-0.03	-0.03	0.01	0.05	-0.02	-0.06	0.13	0.05	0.02	0.03	0.11	0.07
CH_DPS	0.12	0.17	0.28	0.36	0.37	-0.01	0.01	0.25	0.35	0.35	0.09	0.05	0.10	0.11	0.16	0.16	0.13	0.13	0.22	0.04	0.02	0.30	0.00	0.03
CH_ROE	0.12	0.15	0.15	0.17	0.17	0.01	-0.01	0.15	0.13	0.08	0.07	0.17	0.26	0.35	0.26	0.17	0.00	-0.06	0.43	0.16	-0.02	0.02	0.04	-0.09
CAPGEAR	-0.05	-0.07	-0.09	-0.09	-0.08	0.10	0.15	-0.05	-0.06	-0.06	0.05	0.00	-0.01	-0.06	-0.06	0.01	0.06	0.09	-0.06	-0.26	0.00	-0.10	-0.03	0.01
CH_CAPGEAR	-0.01	-0.01	-0.02	0.00	0.03	0.01	0.03	-0.05	-0.05	-0.02	-0.06	-0.06	-0.07	-0.08	-0.09	0.03	-0.06	-0.07	-0.09	-0.07	-0.05	-0.05	0.01	-0.05
ROA	0.02	0.04	0.08	0.12	0.16	-0.01	-0.01	0.12	0.18	0.23	0.13	0.12	0.15	0.22	0.22	0.22	0.03	0.04	0.59	0.61	0.11	0.22	0.02	-0.05
GM	0.02	0.03	0.03	0.02	0.03	0.03	0.01	0.02	0.02	0.01	0.04	0.04	0.03	0.01	0.06	0.08	-0.01	-0.09	0.04	0.58	0.06	0.02	0.09	0.03
CH_EBTISALES	0.03	0.05	0.07	0.07	0.08	-0.04	-0.03	0.04	0.03	0.04	0.08	0.13	0.13	0.13	0.10	0.04	0.04	0.04	0.18	0.06	-0.04	0.25	0.04	-0.10
SALESICASH	-0.01	-0.02	-0.02	-0.01	0.00	-0.07	-0.04	-0.02	-0.01	-0.01	-0.11	-0.01	-0.02	-0.02	-0.04	-0.08	-0.08	-0.08	0.02	-0.05	0.07	0.02	0.04	0.10
LN_SALESICASH	0.02	0.01	0.00	0.00	0.00	-0.16	-0.14	0.01	-0.01	-0.04	-0.16	-0.05	-0.08	-0.08	-0.12	-0.12	-0.06	-0.03	-0.02	-0.24	0.17	0.00	0.02	0.10
CH_TA	-0.01	0.00	0.06	0.12	0.19	0.08	0.09	0.07	0.13	0.21	0.03	0.09	0.12	0.18	0.25	0.24	-0.05	-0.07	0.33	0.12	0.08	0.23	0.08	-0.37
CASHIDEBT	0.06	0.10	0.12	0.15	0.18	0.05	0.09	0.10	0.14	0.12	-0.01	0.06	0.08	0.12	0.10	0.09	-0.03	-0.05	0.14	0.04	-0.05	0.15	-0.01	-0.07
WCITA	0.08	0.10	0.11	0.13	0.12	-0.08	-0.08	0.11	0.12	0.09	-0.22	0.06	0.08	0.08	0.10	0.06	-0.20	-0.20	0.23	-0.08	0.03	0.08	0.01	0.04
OPINCITA	0.03	0.03	0.05	0.09	0.11	-0.07	-0.07	0.11	0.15	0.19	0.00	0.04	0.03	0.05	0.08	0.19	0.03	0.04	0.43	0.41	0.12	0.23	0.01	0.03
DIVICF	0.01	0.02	0.04	0.03	0.01	-0.04	0.01	0.03	0.03	-0.01	-0.03	0.00	0.00	0.01	-0.01	0.00	0.02	0.01	0.01	0.05	0.04	0.04	0.03	-0.01
DY	-0.08	-0.10	-0.12	-0.12	-0.10	-0.12	-0.12	-0.03	-0.03	-0.04	0.02	-0.03	-0.02	-0.03	-0.01	-0.03	0.10	0.13	-0.02	0.45	0.06	0.03	0.03	0.00
CH_INVISALES	0.01	0.02	-0.01	0.00	0.01	0.02	0.00	0.00	0.00	0.04	0.02	-0.02	-0.05	-0.09	0.00	-0.13	0.08	0.06	0.07	-0.05	-0.01	-0.03	0.20	-0.38
CH_ARISALES	0.02	0.00	-0.03	-0.02	0.00	-0.03	-0.05	-0.01	-0.01	0.01	-0.03	-0.04	-0.05	-0.04	0.00	-0.07	0.02	0.04	0.00	-0.06	0.13	-0.08	0.27	-0.48
CH_SALESIGM	0.03	0.02	-0.03	-0.06	-0.07	-0.03	-0.04	-0.01	-0.04	-0.04	-0.05	-0.06	-0.06	0.01	-0.03	-0.10	-0.15	-0.12	-0.09	-0.03	-0.13	-0.16	0.00	0.04
CH_SAISALES	-0.01	-0.09	-0.19	-0.32	-0.35	0.12	0.14	-0.22	-0.31	-0.28	-0.22	-0.17	-0.19	-0.18	-0.10	-0.04	-0.27	-0.28	0.07	0.25	-0.18	0.18	0.11	-0.28
LABOUR	0.00	0.00	0.00	-0.01	-0.01	0.02	0.02	-0.03	-0.06	-0.08	0.03	-0.05	-0.03	-0.01	-0.02	-0.16	0.00	-0.01	0.06	0.05	0.02	-0.18	0.03	-0.48
NTC	-0.03	-0.05	-0.06	-0.06	-0.07	0.01	0.09	-0.03	-0.03	-0.06	-0.15	0.01	-0.01	-0.08	-0.04	-0.13	-0.14	-0.13	0.03	-0.11	0.19	-0.02	0.18	-0.07
GFORECAST_12	-0.04	-0.03	0.00	0.02	0.04	-0.12	-0.17	0.03	0.06	0.13	0.52	-0.03	-0.03	-0.05	-0.04	-0.09	0.87	0.73	-0.07	0.01	0.00	0.03	0.00	-0.04
REVISION_12	0.12	0.21	0.39	0.40	0.38	0.10	0.09	0.30	0.39	0.38	0.15	0.08	0.12	0.15	0.21	0.14	0.12	0.07	0.24	0.16	0.05	0.16	0.05	-0.02
REVISION_24	0.17	0.30	0.48	0.50	0.48	0.11	0.11	0.39	0.47	0.43	0.11	0.10	0.12	0.19	0.21	0.16	0.08	0.04	0.22	0.11	0.09	0.17	0.04	-0.01
REVISION_36	0.20	0.37	0.54	0.57	0.55	0.19	0.16	0.41	0.52	0.51	0.09	0.03	0.04	0.22	0.18	0.16	0.02	0.00	0.22	0.13	0.10	0.32	0.14	0.08
RSTRENGTH_ALSI	0.51	0.70	0.92	0.75	0.63	-0.04	-0.08	0.76	0.74	0.58	-0.01	0.13	0.17	0.17	0.10	0.11	-0.04	-0.07	0.13	0.04	-0.06	0.11	-0.01	0.02
RSTRENGTH_SUB	0.49	0.67	0.88	0.71	0.59	-0.05	-0.08	0.72	0.69	0.54	0.02	0.11	0.14	0.15	0.08	0.08	-0.02	-0.05	0.10	0.05	-0.04	0.12	0.00	0.01
CH_RSTRENGTH_ALSI	0.37	0.50	0.61	0.29	0.04	-0.04	-0.04	0.50	0.33	0.18	-0.08	0.07	0.09	0.06	-0.10	-0.02	-0.08	-0.13	-0.06	-0.04	-0.09	-0.05	-0.01	0.06
CH_RSTRENGTH_SUB	0.36	0.48	0.59	0.27	0.04	-0.02	-0.03	0.47	0.30	0.17	-0.06	0.06	0.07	0.04	-0.12	-0.03	-0.07	-0.11	-0.06	-0.02	-0.07	-0.04	0.00	0.07
WRSTRENGTH_ALSI	0.69	0.75	0.87	0.70	0.58	-0.05	-0.08	0.75	0.68	0.52	-0.04	0.12	0.15	0.14	0.07	0.08	-0.06	-0.10	0.10	0.01	-0.05	0.09	0.00	0.03
WRSTRENGTH_SUB	0.67	0.72	0.83	0.66	0.54	-0.05	-0.09	0.71	0.64	0.49	-0.02	0.10	0.13	0.12	0.04	0.05	-0.05	-0.08	0.08	0.02	-0.04	0.10	0.01	0.03
POS_SALES	-0.01	-0.03	-0.06	-0.11	-0.16	-0.05	-0.02	-0.09	-0.14	-0.21	0.03	-0.08	-0.10	-0.11	-0.11	-0.18	0.06	0.02	-0.14	-0.03	-0.01	-0.18	0.03	-0.27
POS_PRETAX	0.00	-0.02	-0.04	-0.08	-0.10	-0.10	-0.08	-0.08	-0.14	-0.20	-0.04	-0.13	-0.15	-0.19	-0.21	-0.24	0.06	-0.02	-0.26	-0.46	-0.04	-0.15	-0.05	0.04
POS_OP	-0.01	-0.02	-0.04	-0.07	-0.09	-0.04	-0.04	-0.08	-0.11	-0.17	0.01	-0.06	-0.06	-0.07	-0.08	-0.11	0.03	-0.04	-0.19	-0.39	-0.07	-0.17	-0.05	0.03
POS_NET	-0.01	-0.03	-0.06	-0.10	-0.13	-0.10	-0.08	-0.09	-0.14	-0.20	-0.03	-0.12	-0.14	-0.18	-0.21	-0.23	0.08	0.00	-0.27	-0.44	-0.03	-0.14	-0.06	0.06
POS_ROE	-0.01	-0.03	-0.10	-0.16	-0.21	-0.08	-0.08	-0.11	-0.17	-0.24	-0.04	-0.15	-0.18	-0.25	-0.28	-0.28	0.10	0.03	-0.53	-0.20	-0.08	-0.17	0.00	0.11

Appendix B.8. Average Correlation Matrix

Continued.

	CH_CURRENT	CH_QUICK	CH_INVTURN	INVITA	CH_INVITA	CH_INV	CH_SALES	CH_DEP	CH_DPS	CH_ROE	CAPGEAR	CH_CAPGEAR	ROA	GM	CH_EBITSALES	SALESCASH	LN_SALESCASH	CH_TA	CASHDEBT	WCITA	OPINCITA	DIVCF	DY	CH_INVSALES
INST_OWN																								
MAN_OWN																								
PE																								
EY																								
MV																								
LN_MV																								
BETA																								
MTB																								
VOL_3																								
LN_VOL_3																								
VOL_6																								
LN_VOL_6																								
VOL_12																								
LN_VOL_12																								
VOL_18																								
LN_VOL_18																								
VOL_24																								
LN_VOL_24																								
SDEV_VOL																								
LN_SDEV_VOL																								
VOLtNOSHARES																								
LN_VOLtNOSHARES																								
AGE																								
MOM_1																								
MOM_3																								
MOM_6																								
MOM_12																								
MOM_18																								
MOM_24																								
NOSHARES																								
LN_NOSHARES																								
MAXP_12																								
MAXP_24																								
MAXP_60																								
EARN																								
EARNG_3																								
EARNG_6																								
EARNG_12																								
EARNG_24																								
EARNG_60																								
EPS																								
LN_EPS																								
ROE																								
PRETAX_PM																								
ACCITA																								
CH_CF																								
CH_ARtSALES																								
CH_ASSTURN																								
CH_CURRENT	1.00																							
CH_QUICK	0.89	1.00																						
CH_INVTURN	0.09	0.10	1.00																					
INVITA	-0.03	-0.03	-0.05	1.00																				
CH_INVITA	0.02	-0.22	-0.14	0.12	1.00																			
CH_INV	-0.03	-0.13	-0.56	-0.03	0.42	1.00																		
CH_SALES	-0.01	0.00	0.03	-0.01	0.12	0.39	1.00																	
CH_DEP	-0.03	-0.06	-0.02	-0.16	0.01	0.32	0.42	1.00																
CH_DPS	0.08	0.10	0.00	0.09	0.01	0.11	0.20	0.05	1.00															
CH_ROE	0.09	0.04	0.09	0.05	-0.02	0.00	0.05	-0.05	0.05	1.00														
CAPGEAR	-0.12	-0.10	0.01	0.13	0.01	-0.03	-0.04	-0.03	-0.03	-0.02	1.00													
CH_CAPGEAR	-0.29	-0.22	0.08	-0.06	0.05	0.12	0.10	0.12	-0.04	-0.08	0.08	1.00												
ROA	0.14	0.10	0.08	-0.03	-0.08	0.04	0.16	0.09	0.20	0.23	-0.35	-0.11	1.00											
GM	-0.02	-0.02	0.09	-0.23	-0.02	-0.03	-0.06	0.01	0.01	0.05	-0.21	-0.07	0.34	1.00										
CH_EBITSALES	0.07	0.06	0.00	0.04	-0.06	0.04	0.01	-0.03	0.16	0.27	-0.02	-0.01	0.08	-0.05	1.00									
SALESCASH	0.00	-0.03	0.01	0.10	0.08	-0.03	0.02	0.00	0.04	-0.05	0.05	-0.08	0.06	0.08	-0.04	1.00								
LN_SALESCASH	-0.08	-0.10	-0.01	0.41	0.12	-0.03	0.02	0.00	0.03	-0.07	0.07	-0.04	-0.02	-0.13	-0.06	0.66	1.00							
CH_TA	0.02	0.03	-0.09	-0.02	-0.09	0.40	0.56	0.33	0.18	0.03	-0.06	0.14	0.18	-0.09	0.10	-0.02	-0.07	1.00						
CASHtDEBT	0.13	0.16	-0.11	-0.01	-0.10	0.10	0.09	0.02	0.12	0.09	-0.09	-0.08	0.13	-0.05	0.13	-0.05	-0.11	0.12	1.00					
WCITA	0.06	0.09	0.00	0.65	0.01	-0.02	0.07	-0.11	0.10	0.04	-0.08	-0.05	0.15	-0.18	0.08	-0.03	0.03	0.06	0.11	1.00				
OPINCITA	0.08	0.06	0.06	0.11	-0.01	0.02	0.13	0.02	0.19	0.09	-0.26	-0.07	0.80	0.30	-0.02	0.12	0.16	0.10	0.06	0.15	1.00			
DIVtCF	0.09	0.10	-0.02	0.01	-0.03	-0.05	-0.04	-0.02	-0.02	0.03	-0.02	-0.03	0.00	-0.04	0.08	0.01	0.02	-0.04	0.03	0.01	0.10	1.00		
DY	-0.03	-0.05	0.05	0.04	0.01	-0.13	-0.13	-0.18	0.13	0.01	-0.08	-0.04	0.21	0.45	-0.05	-0.01	-0.07	-0.13	-0.13	0.03	0.18	-0.01	1.00	
CH_INVtSALES	-0.14	-0.23	-0.67	-0.01	0.36	0.80	-0.11	0.01	-0.02	0.01	-0.01	0.08	-0.07	0.00	0.02	-0.05	-0.04	0.21	0.01	-0.05	-0.05	0.00	-0.06	1.00
CH_ARtSALES	0.07	0.16	-0.22	-0.06	-0.09	0.14	-0.22	-0.02	-0.03	0.05	-0.01	0.06	-0.08	-0.03	0.00	-0.06	-0.05	0.18	-0.04	-0.09	-0.10	-0.04	-0.03	0.33
CH_SALESIGM	-0.06	-0.01	0.03	-0.06	-0.03	0.01	0.06	0.14	-0.20	-0.12	0.00	0.07	-0.03	-0.23	-0.11	0.00	-0.02	0.03	0.07	0.01	-0.12	-0.04	-0.07	-0.08
CH_SAISALES	-0.33	-0.49	-0.14	-0.07	0.12	-0.03	-0.29	-0.03	-0.23	-0.17	-0.17	0.10	0.26	0.02	-0.08	-0.29	-0.34	-0.16	0.08	0.00	0.20	0.08	0.30	0.15
LABOUR	-0.17	-0.10	-0.09	0.02	-0.17	-0.04	-0.36	-0.11	-0.07	-0.05	0.00	0.11	-0.02	0.01	-0.01	-0.02	-0.01	0.04	-0.01	0.00	-0.10	0.02	-0.01	0.20
NTC	0.09	0.09	-0.04	0.23	0.06	-0.02	-0.09	-0.07	-0.03	-0.02	0.16	-0.02	0.00	0.11	-0.02	0.21	0.20	-0.04	0.01	0.21	0.04	0.09	0.05	0.01
GFORECAST_12	-0.02	-0.02	-0.05	-0.01	0.04	0.06	-0.02	0.05	0.12	0.01	0.05	-0.08	0.00	0.03	0.00	-0.03	-0.01	-0.02	0.02	-0.28	0.02	-0.01	-0.04	0.09
REVISION_12	0.08	0.08	-0.02	-0.04	-0.01	0.10	0.15	0.03	0.30	0.11	-0.01	-0.05	0.20	0.09	0.07	0.02	-0.04	0.15	0.11	0.06	0.18	0.00	-0.04	0.04
REVISION_24	0.12	0.12	0.02	0.02	0.00	0.10	0.21	0.06	0.34	0.07	0.01	-0.09	0.20	0.08	0.07	0.04	0.02	0.19	0.13	0.10	0.20	0.01	-0.08	0.02
REVISION_36	0.08	0.08	0.07	0.06	0.04	0.21	0.29	-0.04	0.44	0.19	-0.13	-0.14	0.22	0.04	0.03	-0.01	-0.04	0.14	0.23	0.13	0.25	0.05	-0.16	-0.03
RSTRENGTH_ALSI	0.05	0.09	-0.01	0.04	-0.09	0.02	0.11	-0.06	0.28	0.15	-0.10	-0.01	0.10	0.04	0.07	-0.02	0.00	0.08	0.14	0.10	0.06	0.04	-0.10	0.00
RSTRENGTH_SUB	0.04	0.08	-0.01	0.00	-0.10	0.01	0.09	-0.06	0.26	0.13	-0.14	-0.01	0.11	0.05	0.06	-0.04	-0.03	0.06	0.15	0.04	0.08	0.05	-0.11	0.01
CH_RSTRENGTH_ALSI	0.03	0.07	0.01	0.01	-0.10	-0.04	-0.02	-0.06	0.03	0.03	-0.03	-0.02	-0.06	-0.02	0.01	-0.03	-0.01	-0.08	0.06	0.06	-0.02	0.06	-0.11	-0.02
CH_RSTRENGTH_SUB	0.03	0.07	0.02	-0.01	-0.11	-0.06	-0.02	-0.07	0.03	0.02	-0.04	-0.02	-0.05	-0.01	0.01	-0.04	-0.01	-0.07	0.06	0.03	0.00	0.05	-0.11	-0.03
WRSTRENGTH_ALSI	0.05	0.09	-0.02	0.04	-0.09	0.03	0.09	-0.04	0.23	0.14	-0.10	0.00	0.07	0.05	0.07	0.00	0.02	0.05	0.12	0.09	0.05	0.04	-0.14	0.01
WRSTRENGTH_SUB	0.04	0.08	-0.02	0.00	-0.09	0.01	0.07	-0.04	0.21	0.13	-0.13	0.00	0.07	0.05	0.06	-0.03	0.00	0.03	0.13	0.04	0.05	0.04	-0.15	0.01
POS_SALES	0.03	0.02	0.00	-0.12	-0.10	-0.24	-0.62	-0.23	-0.20	-0.04	0.02	-0.04	-0.11	0.15	-0.01	-0.01	-0.01	-0.38	0.01	-0.12	-0.10	0.06	0.07	0.05
POS_PRETAX	-0.06	-0.01	-0.09	0.05	0.03	-0.03	-0.07	0.03	-0.08	-0.17	0.23	0.03	-0.48	-0.19	-0.07	0.03	0.14	-0.09	-0.03	-0.03	-0.39	0.01	-0.16	0.02
POS_OP	-0.03	0.01	-0.08	0.02	0.00	-0.04	-0.05	0.03	-0.07	-0.07	0.20	-0.01	-0.45	-0.24	0.01	-0.04	0.03	-0.06	0.01	0.01	-0.52	0.01	-0.19	0.01
POS_NET	-0.06	-0.02	-0.08	0.06	0.03	-0.04	-0.07	0.01	-0.10	-0.16	0.23	0.02	-0.50	-0.22	-0.06	-0.01	0.10	-0.10	-0.04	-0.01	-0.38	0.01	-0.15	0.01
POS_ROE	-0.11	-0.06	-0.02	-0.18	0.06	-0.12	-0.19	-0.10	-0.18	-0.19	0.06	0.08	-0.45	0.08	-0.12	-0.03	-0.05	-0.26	-0.10	-0.20	-0.38	0.06	0.00	-0.02

Appendix B.8. Average Correlation Matrix

Continued.

	CH_ARISALES	CH_SALESIGM	CH_SAISALES	LABOUR	NTC	GFORECAST_12	REVISION_12	REVISION_24	REVISION_36	RSTRENGTH_ALSI	RSTRENGTH_SUB	CH_RSTRENGTH_ALSI	CH_RSTRENGTH_SUB	WRSTRENGTH_ALSI	WRSTRENGTH_SUB	POS_SALES	POS_PRETAX	POS_OP	POS_NET	POS_ROE
INST_OWN																				
MAN_OWN																				
PE																				
EY																				
MV																				
LN_MV																				
BETA																				
MTB																				
VOL_3																				
LN_VOL_3																				
VOL_6																				
LN_VOL_6																				
VOL_12																				
LN_VOL_12																				
VOL_18																				
LN_VOL_18																				
VOL_24																				
LN_VOL_24																				
SDEV_VOL																				
LN_SDEV_VOL																				
VOLINOSHARES																				
LN_VOLINOSHARES																				
AGE																				
MOM_1																				
MOM_3																				
MOM_6																				
MOM_12																				
MOM_18																				
MOM_24																				
NOSHARES																				
LN_NOSHARES																				
MAXP_12																				
MAXP_24																				
MAXP_60																				
EARN																				
EARNG_3																				
EARNG_6																				
EARNG_12																				
EARNG_24																				
EARNG_60																				
EPS																				
LN_EPS																				
ROE																				
PRETAX_PM																				
ACCITA																				
CH_CF																				
CH_ARISALES																				
CH_ASSTURN																				
CH_CURRENT																				
CH_QUICK																				
CH_INVTURN																				
INVITA																				
CH_INVITA																				
CH_INV																				
CH_SALES																				
CH_DEP																				
CH_DPS																				
CH_ROE																				
CAPGEAR																				
CH_CAPGEAR																				
ROA																				
GM																				
CH_EBTISALES																				
SALESICASH																				
LN_SALESICASH																				
CH_TA																				
CASHIDEBT																				
WCITA																				
OPINCITA																				
DIVICF																				
DY																				
CH_INVISALES																				
CH_ARISALES	1.00																			
CH_SALESIGM	-0.06	1.00																		
CH_SAISALES	-0.02	-0.08	1.00																	
LABOUR	0.24	0.02	0.25	1.00																
NTC	0.09	-0.08	-0.01	0.06	1.00															
GFORECAST_12	0.02	-0.11	-0.31	0.00	-0.09	1.00														
REVISION_12	-0.05	-0.13	-0.28	-0.01	0.05	0.14	1.00													
REVISION_24	-0.08	-0.08	-0.25	-0.08	0.04	0.11	0.76	1.00												
REVISION_36	-0.01	-0.27	-0.17	-0.17	-0.03	0.02	0.65	0.78	1.00											
RSTRENGTH_ALSI	-0.05	-0.01	-0.21	-0.02	-0.06	-0.01	0.38	0.46	0.51	1.00										
RSTRENGTH_SUB	-0.03	0.00	-0.16	-0.01	-0.11	0.05	0.33	0.37	0.41	0.95	1.00									
CH_RSTRENGTH_ALSI	-0.07	0.08	-0.07	0.03	-0.03	-0.07	0.13	0.18	0.18	0.67	0.65	1.00								
CH_RSTRENGTH_SUB	-0.05	0.08	-0.04	0.02	-0.05	-0.04	0.09	0.12	0.10	0.64	0.68	0.96	1.00							
WRSTRENGTH_ALSI	-0.03	0.00	-0.16	-0.02	-0.05	-0.03	0.31	0.39	0.44	0.93	0.89	0.66	0.63	1.00						
WRSTRENGTH_SUB	-0.02	0.01	-0.12	-0.01	-0.10	0.02	0.26	0.30	0.36	0.89	0.93	0.63	0.66	0.96	1.00					
POS_SALES	0.14	-0.03	0.20	0.30	0.11	0.05	-0.07	-0.12	-0.22	-0.09	-0.07	0.04	0.04	-0.06	-0.04	1.00				
POS_PRETAX	0.04	0.10	-0.33	-0.03	0.05	0.19	-0.10	-0.13	-0.05	-0.06	-0.04	0.05	0.06	-0.04	-0.02	0.37	1.00			
POS_OP	0.06	0.07	-0.28	-0.02	-0.05	0.17	-0.08	-0.10	-0.05	-0.05	-0.04	0.04	0.04	-0.04	-0.03	0.32	0.87	1.00		
POS_NET	0.04	0.11	-0.31	-0.03	0.04	0.19	-0.09	-0.12	-0.07	-0.08	-0.06	0.04	0.06	-0.06	-0.04	0.36	0.96	0.86	1.00	
POS_ROE	0.02	0.13	-0.11	-0.01	0.11	0.15	-0.11	-0.14	-0.10	-0.10	-0.08	0.05	0.06	-0.07	-0.05	0.47	0.63	0.55	0.64	1.00

Appendix B.9. Weighted Correlation Matrix

The table below shows a matrix of the Pearson correlation coefficients between each of the 92 variables considered in this study over the period extending from January 1995 until December 2004. The correlations between each variable are calculated as a weighted average of the Pearson correlation coefficients between the variables over the 120 months of this study. The weight for each pairwise combination in each month is calculated as the number of joint observations between those two variables for that month as a percentage of the total number of joint observations for those two variables over the whole sample period. The highlighted cells indicate those variables for which the null hypothesis of perfect correlation cannot be rejected at the 5% significance level.

	INST_OWN	MAN_OWN	PE	EY	MV	LN_MV	BETA	MTB	VOL_3	LN_VOL_3	VOL_6	LN_VOL_6	VOL_12	LN_VOL_12	VOL_18	LN_VOL_18	VOL_24	LN_VOL_24	SDEV_VOL	LN_SDEV_VOL	VOLINOSHARES	LN_VOLINOSHARES	AGE	MOM_1
INST_OWN	1.00																							
MAN_OWN	0.10	1.00																						
PE	-0.09	0.00	1.00																					
EY	0.04	0.05	-0.57	1.00																				
MV	-0.02	0.03	0.14	-0.15	1.00																			
LN_MV	0.07	0.02	0.16	-0.22	0.74	1.00																		
BETA	-0.02	-0.04	0.18	-0.19	0.53	0.56	1.00																	
MTB	-0.09	-0.05	0.37	-0.31	0.21	0.29	0.14	1.00																
VOL_3	-0.02	0.03	-0.03	0.04	-0.09	-0.09	-0.08	-0.03	1.00															
LN_VOL_3	0.00	-0.02	0.01	0.00	0.07	0.06	0.04	0.02	0.67	1.00														
VOL_6	-0.01	0.03	-0.02	0.03	-0.06	-0.08	-0.06	-0.03	0.80	0.62	1.00													
LN_VOL_6	0.02	-0.02	0.03	-0.01	0.11	0.10	0.09	0.04	0.55	0.89	0.66	1.00												
VOL_12	0.02	0.04	-0.02	0.01	-0.03	-0.05	-0.03	-0.01	0.67	0.58	0.83	0.64	1.00											
LN_VOL_12	0.04	-0.01	0.03	-0.03	0.15	0.15	0.12	0.06	0.48	0.82	0.57	0.92	0.69	1.00										
VOL_18	0.04	0.05	-0.01	0.01	0.00	-0.01	-0.01	0.00	0.63	0.58	0.78	0.63	0.93	0.67	1.00									
LN_VOL_18	0.05	0.00	0.03	-0.03	0.18	0.17	0.14	0.07	0.46	0.79	0.54	0.89	0.64	0.97	0.69	1.00								
VOL_24	0.04	0.06	-0.01	0.01	0.02	0.01	0.01	0.01	0.60	0.57	0.75	0.63	0.90	0.67	0.97	0.69	1.00							
LN_VOL_24	0.05	0.01	0.02	-0.04	0.19	0.19	0.16	0.07	0.44	0.78	0.53	0.87	0.62	0.95	0.66	0.98	0.69	1.00						
SDEV_VOL	0.02	0.03	-0.03	0.04	-0.05	-0.08	-0.05	-0.01	0.23	0.02	0.35	0.12	0.45	0.21	0.44	0.22	0.41	0.20	1.00					
LN_SDEV_VOL	0.02	0.01	0.00	-0.01	0.10	0.09	0.08	0.03	0.21	0.08	0.32	0.27	0.44	0.43	0.44	0.44	0.43	0.42	0.67	1.00				
VOLINOSHARES	0.05	-0.01	0.06	-0.03	0.09	0.09	0.11	0.01	0.36	0.41	0.47	0.45	0.53	0.47	0.57	0.48	0.59	0.49	0.25	0.29	1.00			
LN_VOLINOSHARES	0.08	-0.06	0.08	-0.08	0.25	0.26	0.26	0.05	0.31	0.63	0.39	0.70	0.45	0.75	0.49	0.78	0.51	0.79	0.16	0.32	0.66	1.00		
AGE	-0.07	0.02	0.04	-0.12	0.42	0.41	0.38	0.04	-0.04	0.04	-0.03	0.06	-0.01	0.09	0.01	0.11	0.02	0.12	-0.04	0.06	0.05	0.15	1.00	
MOM_1	0.00	0.02	0.08	-0.08	0.00	0.01	0.00	0.07	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.04	0.01	0.03	0.01	0.02	0.01	0.05	-0.01	1.00
MOM_3	-0.01	0.04	0.12	-0.11	0.00	0.01	0.00	0.12	-0.01	0.00	0.01	0.02	0.02	0.04	0.02	0.04	0.01	0.03	0.02	0.02	0.03	0.06	-0.02	0.55
MOM_6	-0.02	0.03	0.16	-0.12	0.00	0.01	-0.01	0.16	-0.01	-0.01	-0.01	0.00	0.01	0.02	0.01	0.01	0.00	0.01	0.02	0.01	0.03	0.05	-0.02	0.40
MOM_12	-0.02	0.02	0.20	-0.11	0.01	0.03	0.01	0.21	0.00	0.00	-0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	-0.01	0.00	0.03	0.04	-0.02	0.30
MOM_18	-0.02	0.04	0.21	-0.07	0.03	0.05	0.02	0.28	0.00	0.01	-0.01	0.01	0.00	0.03	0.01	0.02	0.01	0.02	-0.01	0.01	0.03	0.04	-0.02	0.23
MOM_24	-0.04	0.05	0.19	-0.05	0.05	0.07	0.02	0.34	-0.01	0.02	-0.01	0.02	0.00	0.03	0.00	0.04	0.00	0.03	-0.02	0.01	0.01	0.04	-0.01	0.19
NOSHARES	0.02	-0.05	0.09	-0.13	0.32	0.43	0.17	0.13	-0.05	0.03	-0.04	0.05	-0.02	0.08	0.00	0.09	0.01	0.10	-0.04	0.05	0.00	0.04	0.03	-0.03
LN_NOSHARES	0.04	-0.05	0.06	-0.13	0.39	0.52	0.19	0.18	-0.05	0.03	-0.04	0.05	-0.02	0.08	-0.01	0.09	0.01	0.10	-0.04	0.04	-0.05	0.03	0.03	-0.04
MAXP_12	0.00	0.06	0.14	-0.11	0.10	0.18	-0.01	0.16	-0.01	0.01	-0.01	0.02	0.00	0.03	0.00	0.02	-0.01	0.01	-0.01	0.00	0.01	0.04	-0.01	0.49
MAXP_24	0.04	0.10	0.16	-0.08	0.14	0.25	0.00	0.22	-0.01	0.02	-0.01	0.03	0.00	0.04	0.00	0.04	0.00	0.03	-0.01	0.01	0.01	0.05	-0.01	0.37
MAXP_60	-0.05	0.09	0.16	-0.11	0.24	0.39	0.07	0.30	-0.03	0.03	-0.03	0.05	-0.01	0.07	0.01	0.08	0.01	0.08	-0.02	0.05	0.04	0.11	-0.02	0.26
EARN	0.02	0.05	0.03	-0.04	0.83	0.68	0.42	0.09	-0.08	0.06	-0.05	0.10	-0.03	0.14	0.00	0.16	0.01	0.17	-0.04	0.09	0.11	0.23	0.43	-0.01
EARNG_3	0.02	0.02	0.01	-0.01	0.05	0.05	-0.03	0.02	0.00	0.01	0.00	0.01	0.00	0.02	0.01	0.01	0.00	0.01	-0.01	0.00	-0.02	0.01	-0.01	0.05
EARNG_6	0.03	0.00	0.01	0.07	0.10	0.07	-0.03	0.03	0.00	0.00	0.00	0.01	0.00	0.02	-0.01	0.01	-0.01	0.01	-0.01	0.01	-0.02	0.00	-0.01	0.06
EARNG_12	0.08	0.01	0.03	0.17	0.12	0.10	-0.02	0.05	-0.01	0.01	-0.01	0.01	-0.01	0.02	-0.01	0.02	-0.01	0.01	-0.01	0.03	-0.02	0.01	-0.04	0.04
EARNG_24	-0.01	0.08	0.01	0.23	0.18	0.13	0.00	0.08	-0.01	0.02	0.00	0.03	0.01	0.04	0.02	0.05	0.02	0.06	0.02	0.04	0.02	0.05	-0.01	0.01
EARNG_60	0.01	0.08	0.01	0.13	0.22	0.21	0.04	0.15	-0.03	0.03	-0.02	0.04	-0.02	0.05	0.00	0.06	0.02	0.07	-0.02	0.02	0.09	0.15	-0.09	0.03
EPS	0.10	0.10	-0.06	0.02	0.44	0.51	0.40	0.05	-0.05	0.04	-0.04	0.07	-0.02	0.10	0.00	0.11	0.01	0.12	-0.05	0.06	0.02	0.09	0.44	-0.01
LN_EPS	0.11	0.04	-0.19	-0.03	0.40	0.57	0.39	0.10	-0.05	0.04	-0.04	0.07	-0.01	0.11	0.01	0.13	0.03	0.15	-0.04	0.07	0.02	0.09	0.50	-0.03
ROE	-0.02	0.13	-0.04	0.19	0.07	0.12	0.01	0.27	0.00	0.03	0.00	0.02	0.01	0.03	0.01	0.03	0.01	0.03	-0.01	0.01	0.04	0.03	-0.08	0.04
PRETAX_PM	0.05	0.04	-0.04	0.30	0.13	0.21	0.02	0.02	0.00	0.02	-0.01	0.02	0.01	0.03	0.02	0.04	0.02	0.05	0.00	0.03	0.02	0.04	0.06	0.02
ACCITA	-0.02	-0.03	-0.01	0.06	0.01	0.02	-0.02	0.01	-0.03	-0.01	-0.01	0.00	-0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.02	0.05	0.04	-0.02	0.01
CH_CF	0.02	0.06	0.04	0.08	0.04	0.10	0.05	0.12	0.00	0.01	0.01	0.03	0.01	0.04	0.03	0.05	0.03	0.05	-0.01	0.03	0.05	0.07	0.00	0.03
CH_ARISALES	0.05	0.03	0.00	0.02	-0.03	-0.04	-0.06	-0.01	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.02	0.03	0.04	0.03	0.01	-0.04	-0.01
CH_ASSTURN	0.03	-0.05	0.01	0.04	-0.05	-0.07	-0.03	-0.02	-0.02	-0.02	-0.02	-0.01	-0.03	-0.03	-0.04	-0.04	-0.04	-0.04	-0.01	-0.03	-0.03	-0.04	-0.07	0.00
CH_CURRENT	-0.05	-0.02	0.06	0.06	0.01	0.03	-0.05	0.01	-0.03	-0.01	-0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	-0.01	0.02	0.05	0.05	0.00	0.02
CH_QUICK	-0.03	-0.04	0.06	0.05	0.02	0.02	-0.04	0.02	-0.02	-0.01	-0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.00	0.02	0.06	0.04	0.01	0.04
CH_INVTURN	0.08	0.04	0.00	0.01	-0.02	-0.02	-0.04	0.02	-0.01	0.00	0.00	-0.01	0.00	-0.01	-0.02	-0.02	-0.02	-0.04	0.00	-0.02	-0.03	-0.02	-0.02	-0.01
INVITA	-0.05	0.14	-0.21	0.17	-0.16	-0.16	-0.05	-0.17	0.02	-0.02	0.01	-0.04	-0.01	-0.05	-0.02	-0.06	-0.02	-0.06	0.01	-0.03	-0.08	-0.14	0.03	0.03
CH_INVITA	0.08	0.04	0.00	-0.05	0.00	-0.02	0.00	-0.03	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.01	0.00	0.00	0.01	-0.05	-0.02
CH_INV	-0.01	0.03	0.10	-0.10	0.06	0.05	0.03	0.08	0.00	0.03	0.01	0.04	0.01	0.05	0.03	0.06	0.04	0.07	-0.01	0.03	0.04	0.05	-0.10	0.00
CH_SALES	-0.01	-0.03	0.12	-0.01	0.04	0.07	0.03	0.17	-0.01	0.01	0.00	0.03	0.01	0.04	0.03	0.05	0.03	0.05	0.00	0.04	0.02	0.00	-0.16	0.00
CH_DEP	-0.08	-0.04	0.07	-0.10	0.01	0.02	0.03	0.07	-0.02	0.00	-0.01	0.01	0.02	0.03	0.03	0.04	0.03	0.05	0.00	0.04	0.04	0.05	-0.10	-0.04
CH_DPS	-0.02	-0.03	-0.11	0.06	0.07	0.12	0.04	0.18	-0.01	0.01	-0.01	0.02	-0.01	0.02	-0.01	0.02	-0.01	0.02	0.00	0.01	0.00	0.02	0.02	0.06
CH_ROE	0.03	0.05	0.04	0.10	0.01	0.00	-0.01	-0.03	0.02	0.00	0.00	-0.02	-0.01	-0.03	0.00	-0.02	0.00	-0.02	-0.01	-0.02	-0.02	-0.01	0.03	0.08
CAPGEAR	-0.02	-0.09	0.01	-0.12	0.07	0.06	0.04	0.09	-0.01	0.01	-0.02	0.01	-0.01	0.02	0.00	0.03	0.00	0.03	-0.01	0.01	0.00	0.02	0.04	-0.03
CH_CAPGEAR	0.01	0.02	0.01	-0.08	-0.03	-0.06	0.01	0.04	0.01	-0.01	0.00	-0.01	0.00	-0.01	0.01	0.00	0.01	0.00	-0.02	-0.01	-0.01	0.00	-0.06	-0.02
ROA	-0.03	0.14	-0.09	0.28	0.06	0.11	0.02	0.16	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.01	0.00	0.00	0.03
GM	0.03	0.18	-0.03	0.23	0.00	-0.08	-0.23	-0.02	0.04	0.01	0.01	-0.01	0.02	-0.01	0.01	-0.01	0.01	-0.01	0.02	-0.01	-0.03	-0.05	0.00	0.02
CH_EBTISALES	0.02	0.03	-0.04	0.06	0.03	0.00	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.02	0.03	0.03	0.03	0.04	0.01	0.04	0.04	0.02	-0.05	0.03
SALESTCASH	-0.05	-0.03	-0.02	0.04	-0.10	-0.14	-0.04	0.05	0.00	-0.02	0.01	-0.03	0.00	-0.03	0.00	-0.03	0.00	-0.03	0.03	0.00	-0.06	-0.09	-0.02	-0.01
LN_SALESTCASH	0.02	-0.04	-0.13	0.08	-0.17	-0.20	-0.03	-0.07	0.01	-0.01	0.00	-0.02	0.00	-0.02	-0.01	-0.02	-0.01	-0.02	0.02	0.00	-0.07	-0.10	0.03	0.02
CH_TA	-0.05	0.02	0.06	-0.02	0.06	0.10	0.03	0.15	0.01	0.03	0.02	0.04	0.04	0.06	0.06	0.07	0.06	0.07	0.01	0.05	0.05	0.05	-0.14	-0.01
CASHTDEBT	-0.13	0.06	0.14	-0.01	-0.01	-0.02	0.01	0.06	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.04	0.03	0.02	-0.04	-0.02	-0.04	0.03
WCITA	0.03	0.09	-0.13	0.20	-0.24	-0.19	-0.12	-0.05	0.02	-0.03	0.01	-0.05	-0.01	-0.07	-0.03	-0.09	-0.04	-0.09	0.00	-0.07	-0.06	-0.09	-0.19	0.04
OPINCITA	-0.04	0.16	-0.14	0.27	0.01	0.07	0.03	0.15	0.03	0.00	0.03	0.00	0.02	-0.01	0.02	-0.02	0.01	-0.01	0.01	-0.01	-0.01	-0.04	0.00	0.04
DIVTCF	-0.02	-0.06	0.03	-0.04	-0.04	0.01	-0.01	0.00	-0.01	-0.02	-0.01	-0.03	-0.02	-0.03	-0.01	-0.03	-0.01	-0.04	0.00	-0.03	0.01	-0.02	-0.03	0.00
DY	0.05	0.05	-0.34	0.45	-0.07	-0.10	-0.18	-0.27	0.04	-0.01	0.02	-0.03	0.01	-0.05	0.00	-0.05	0.00	-0.05	0.00	-0.03	-0.06	-0.10	0.07	-0.04
CH_INVISALES	0.03	0.05	0.00	-0.09	0.06	0.05	0.06	0.02	0.02	0.02	0.01	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.00	0.01	0.01	0.02	0.02	0.00
CH_ARISALES	0.01	0.04	0.06	-0.04	0.02	0.02	0.03	-0.02	0.01	0.01	0.01	0.01	0.03	0.03	0.03	0.03	0.03	0.04	0.01	0.03	0.04	0.05	0.05	0.01
CH_SALESIGM	-0.10	-0.09	0.15	-0.19	-0.02	-0.07	0.00	0.09	-0.01	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.02	-0.02	-0.03	0.01	-0.01	0.00	0.00	-0.01	0.00
CH_SAISALES	-0.16	-0.23	-0.13	-0.10	-0.06	-0.08	-0.08	-0.09	-0.02	-0.02	-0.01	0.00	0.03	0.02	0.03	0.04	0.03	0.04	0.05	0.08	0.05	0.07	-0.01	-0.06
LABOUR	-0.07	-0.07	-0.02	-0.07	-0.02	-0.02	-0.05	-0.04	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.01	-0.01	-0.01	0.01	0.00	0.02	-0.01
NTC	0.07	0.14	-0.08	0.03	-0.17	-0.16	-0.18	-0.04	0.01	-0.02	0.01	-0.03	0.00	-0.04	0.00	-0.04	0.00	-0.05	0.02	-0.03	-0.01	-0.03	-0.15	-0.02
QFORECAST_12	-0.06	0.23	0.03	-0.09	0.49	0.54	0.46	0.05	-0.06	0.05	-0.04	0.09	-0.01	0.13	0.01	0.14	0.02	0.15	-0.03	0.09	0.05	0.16	0.55	-0.01
REVISION_12	0.04	0.06	0.10	0.02	0.16	0.20	0.04	0.20	-0.01	0.01	0.00	0.03	0.01	0.05	0.03	0.06	0.03	0.05	0.01	0.04	0.01	0.03	0.00	0.06
REVISION_24	0.04	0.04	0.20	-0.08	0.17	0.21	0.06	0.28	-0.02	0.03	0.00	0.05	0.01	0.07	0.02	0.07	0.01	0.06	0.00	0.02	-0.01	0.03	0.02	0.11
REVISION_36	0.18	0.07	0.17	-0.06	0.14	0.19	0.01	0.26	0.00	0.04	0.02	0.06	0.02	0.09	0.03	0.08	0.03	0.07	0.00	0.05	0.06	0.10	0.08	0.09
RSTRENGTH_ALSI	0.00	0.02	0.16	-0.11	0.03	0.05	-0.02	0.18	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	-0.02	0.02	0.03	-0.03	0.31
RSTRENGTH_SUB	-0.02	-0.01	0.18	-0.11	0.04	0.06	0.01	0.18	-0.01	0.00	-0.02	0.00	-0.01	0.00	-0.01	0.00	-0.02	-0.01	-0.02	-0.02	0.01	0.03	0.00	0.30
CH_RSTRENGTH_ALSI	0.01	-0.05	0.06	-0.08	-0.06	-0.06	-0.03	0.01	-0.01	-0.02	-0.01	-0.03	-0.01	-0.04	-0.02	-0.04	-0.02	-0.04	0.00	-0.04	0.00	-0.01	-0.09	0.22
CH_RSTRENGTH_SUB	-0.01	-0.05	0.08	-0.09	-0.04	-0.04	-0.01	0.03	-0.01	-0.02	-0.01	-0.03	-0.01	-0.04	-0.03	-0.04	-0.02	-0.04	0.00	-0.05	0.00	-0.01	-0.07	0.22
WRSTRENGTH_ALSI	0.01	0.01	0.16	-0.13	0.00	0.01	-0.02	0.17	-0.01	0.00	-0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.03	0.05	-0.04	0.40
WRSTRENGTH_SUB	-0.01	-0.02	0.17	-0.13	0.01	0.02	0.01	0.17	-0.01	0.00	-0.01	0.00	0.00	0.01	-0.01	0.01	-0.01	0.00	-0.01	-0.01	0.02	0.04	-0.02	0.39
POS_SALES	0.03	-0.01	-0.08	0.02	-0.03	-0.09	-0.10	-0.11	0.02	-0.01	0.01	-0.02	-0.01	-0.04	-0.01	-0.04	-0.01	-0.03	0.01	-0.03	-0.01	-0.01	0.11	0.01
POS_PRETAX	0.02	-0.08	0.01	-0.08	-0.03	-0.20	-0.09	-0.07	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.01	-0.01	-0.01	-0.01	0.01	-0.02	-0.04	-0.02	0.01	0.01
POS_OP	0.01	-0.13	0.02	-0.08	-0.02	-0.18	-0.08	-0.07	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	-0.01	-0.01	-0.01	0.02	-0.01	-0.03	-0.01	0.02	-0.01
POS_NET	0.03	-0.09	0.01	-0.09	-0.01	-0.16	-0.07	-0.08	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.01	-0.01	-0.02	-0.01	0.01	-0.02	-0.04	-0.02	0.01	0.00
POS_ROE	0.04	-0.06	0.00	-0.11	-0.06	-0.15	-0.13	-0.25	0.02	-0.02	0.01	-0.03	0.00	-0.04	-0.01	-0.05	-0.01	-0.05	0.01	-0.02	0.00	-0.01	0.05	0.00

Appendix B.9. Weighted Correlation Matrix

Continued.

	MOM_3	MOM_6	MOM_12	MOM_18	MOM_24	NOSHARES	LN_NOSHARES	MAXP_12	MAXP_24	MAXP_60	EARN	EARNG_3	EARNG_6	EARNG_12	EARNG_24	EARNG_60	EPS	LN_EPS	ROE	PRETAX_PM	ACCITA	CH_CF	CH_ARISALES	CH_ASSTURN
INST_OWN																								
MAN_OWN																								
PE																								
EY																								
MV																								
LN_MV																								
BETA																								
MTB																								
VOL_3																								
LN_VOL_3																								
VOL_6																								
LN_VOL_6																								
VOL_12																								
LN_VOL_12																								
VOL_18																								
LN_VOL_18																								
VOL_24																								
LN_VOL_24																								
SDEV_VOL																								
LN_SDEV_VOL																								
VOLtNOSHARES																								
LN_VOLtNOSHARES																								
AGE																								
MOM_1																								
MOM_3	1.00																							
MOM_6	0.69	1.00																						
MOM_12	0.51	0.72	1.00																					
MOM_18	0.39	0.57	0.81	1.00																				
MOM_24	0.31	0.45	0.68	0.85	1.00																			
NOSHARES	-0.05	-0.06	-0.05	-0.03	-0.01	1.00																		
LN_NOSHARES	-0.07	-0.08	-0.09	-0.08	-0.05	0.84	1.00																	
MAXP_12	0.64	0.73	0.69	0.55	0.45	-0.06	-0.06	1.00																
MAXP_24	0.51	0.61	0.67	0.66	0.59	-0.03	-0.04	0.87	1.00															
MAXP_60	0.37	0.44	0.51	0.55	0.55	0.02	0.03	0.67	0.81	1.00														
EARN	-0.03	-0.04	-0.02	-0.01	0.00	0.21	0.29	0.09	0.14	0.22	1.00													
EARNG_3	0.06	0.10	0.11	0.10	0.07	0.07	0.06	0.12	0.10	0.09	0.12	1.00												
EARNG_6	0.09	0.13	0.15	0.13	0.09	0.04	0.08	0.18	0.14	0.11	0.18	0.62	1.00											
EARNG_12	0.05	0.09	0.17	0.18	0.16	0.02	0.09	0.15	0.18	0.13	0.22	0.35	0.62	1.00										
EARNG_24	0.02	0.03	0.10	0.19	0.24	0.11	0.18	0.08	0.17	0.17	0.27	0.27	0.39	0.59	1.00									
EARNG_60	0.06	0.09	0.13	0.16	0.19	0.38	0.35	0.14	0.17	0.27	0.24	0.21	0.29	0.41	0.51	1.00								
EPS	-0.03	-0.05	-0.04	-0.02	0.00	-0.10	-0.09	0.05	0.09	0.16	0.56	-0.01	-0.01	-0.01	-0.03	-0.09	1.00							
LN_EPS	-0.05	-0.07	-0.07	-0.05	-0.02	-0.13	-0.12	0.04	0.09	0.17	0.52	-0.02	-0.02	-0.07	-0.10	-0.14	0.81	1.00						
ROE	0.05	0.07	0.12	0.20	0.24	0.08	0.08	0.16	0.22	0.26	0.17	0.15	0.21	0.30	0.39	0.44	0.02	-0.02	1.00					
PRETAX_PM	0.01	0.02	0.04	0.07	0.08	0.07	0.06	0.14	0.18	0.23	0.24	0.14	0.22	0.29	0.36	0.34	0.12	0.14	0.45	1.00				
ACCITA	0.00	-0.01	-0.02	0.00	0.01	-0.01	0.02	0.02	0.03	0.02	0.01	0.00	-0.02	-0.03	0.07	0.02	0.00	-0.04	0.18	0.05	1.00			
CH_CF	0.03	0.06	0.13	0.20	0.22	0.01	0.01	0.14	0.21	0.25	0.08	0.09	0.11	0.15	0.10	0.15	0.05	0.04	0.17	0.17	0.00	1.00		
CH_ARISALES	-0.01	-0.01	-0.01	0.00	0.00	-0.02	-0.02	0.00	0.01	0.02	-0.01	-0.01	-0.01	-0.01	0.08	-0.02	-0.01	-0.03	0.04	0.08	0.06	0.01	1.00	
CH_ASSTURN	0.01	0.01	-0.01	-0.04	-0.06	0.02	0.02	-0.03	-0.04	-0.06	-0.08	0.00	0.01	-0.02	-0.14	0.04	-0.04	-0.05	-0.20	-0.08	-0.03	-0.04	-0.10	1.00
CH_CURRENT	0.04	0.06	0.08	0.05	0.02	0.01	0.01	0.09	0.06	0.05	0.01	0.09	0.13	0.15	0.10	0.06	0.00	-0.03	0.19	0.13	0.50	0.04	-0.09	-0.03
CH_QUICK	0.07	0.10	0.11	0.08	0.05	-0.01	-0.02	0.11	0.07	0.05	0.00	0.08	0.12	0.15	0.12	0.03	0.00	-0.01	0.16	0.10	0.37	0.03	0.15	0.05
CH_INVTURN	-0.01	0.01	0.03	0.04	0.04	0.02	0.03	0.00	0.00	-0.06	0.01	0.04	0.08	0.13	0.02	0.09	-0.03	-0.04	0.00	0.04	-0.07	0.03	-0.15	0.19
INVITA	0.06	0.07	0.07	0.07	0.06	-0.24	-0.24	0.09	0.08	0.04	-0.09	-0.01	-0.01	-0.03	-0.02	-0.08	-0.02	0.06	0.06	-0.16	0.16	0.02	-0.01	0.00
CH_INVITA	-0.05	-0.08	-0.12	-0.11	-0.09	-0.02	0.00	-0.07	-0.07	-0.05	-0.05	-0.04	-0.11	-0.18	-0.14	-0.12	0.01	-0.02	-0.12	-0.09	0.13	-0.01	0.01	0.21
CH_INV	-0.02	-0.03	-0.04	-0.01	0.05	0.08	0.08	-0.02	-0.01	0.09	0.02	0.00	-0.04	-0.08	0.03	0.06	0.04	-0.04	0.12	0.01	0.10	0.04	0.16	-0.13
CH_SALES	-0.01	0.01	0.04	0.07	0.13	0.10	0.10	0.06	0.11	0.18	0.02	0.07	0.09	0.12	0.10	0.25	-0.03	-0.06	0.20	0.14	0.08	0.18	0.00	0.47
CH_DEP	-0.07	-0.08	-0.09	-0.08	-0.04	0.14	0.13	-0.11	-0.09	-0.02	-0.05	-0.03	-0.06	-0.10	-0.05	0.05	-0.04	-0.05	0.04	-0.01	-0.03	-0.01	0.07	0.13
CH_DPS	0.12	0.17	0.29	0.37	0.38	-0.01	0.00	0.25	0.35	0.35	0.09	0.05	0.11	0.14	0.18	0.16	0.13	0.13	0.22	0.07	0.02	0.29	-0.01	0.04
CH_ROE	0.12	0.16	0.19	0.20	0.17	-0.02	-0.04	0.16	0.16	0.09	0.09	0.17	0.26	0.36	0.26	0.21	0.00	-0.05	0.44	0.19	0.00	0.05	0.03	-0.05
CAPGEAR	-0.05	-0.08	-0.10	-0.12	-0.11	0.11	0.16	-0.09	-0.11	-0.11	0.05	-0.02	-0.03	-0.08	-0.06	-0.01	0.08	0.09	-0.10	-0.23	0.01	-0.14	-0.01	0.01
CH_CAPGEAR	-0.03	-0.04	-0.06	-0.05	-0.02	0.02	0.04	-0.08	-0.09	-0.06	-0.07	-0.07	-0.09	-0.10	-0.11	-0.01	-0.07	-0.07	-0.11	-0.10	-0.02	-0.05	-0.01	-0.01
ROA	0.03	0.06	0.11	0.16	0.20	-0.05	-0.07	0.16	0.23	0.30	0.17	0.14	0.17	0.24	0.28	0.26	0.05	0.08	0.61	0.64	0.10	0.24	0.03	-0.03
GM	0.04	0.06	0.07	0.07	0.08	0.03	-0.01	0.06	0.06	0.04	0.03	0.06	0.06	0.05	0.10	0.14	-0.02	-0.11	0.08	0.50	0.05	0.03	0.07	0.03
CH_EBTtSALES	0.04	0.05	0.06	0.05	0.05	-0.03	-0.02	0.04	0.02	0.03	0.08	0.10	0.08	0.07	0.10	0.08	0.03	0.04	0.13	0.08	-0.05	0.20	0.04	-0.10
SALEStCASH	-0.01	-0.03	-0.03	-0.02	-0.01	-0.08	-0.07	-0.03	-0.03	-0.03	-0.09	-0.01	-0.01	-0.01	-0.01	-0.08	-0.08	-0.09	0.01	-0.05	0.06	0.02	0.05	0.09
LN_SALEStCASH	0.03	0.03	0.01	0.00	-0.01	-0.19	-0.18	0.00	-0.02	-0.06	-0.14	-0.05	-0.08	-0.08	-0.10	-0.11	-0.06	-0.04	-0.08	-0.23	0.16	0.01	0.04	0.10
CH_TA	-0.03	-0.02	0.03	0.09	0.15	0.06	0.08	0.05	0.11	0.21	0.07	0.07	0.10	0.15	0.23	0.22	-0.02	-0.05	0.32	0.19	0.06	0.24	0.11	-0.39
CASHtDEBT	0.06	0.10	0.12	0.14	0.16	0.01	0.02	0.08	0.11	0.09	-0.03	0.04	0.06	0.07	0.10	0.06	-0.05	-0.07	0.11	0.05	-0.04	0.15	0.02	-0.05
WCITA	0.06	0.08	0.08	0.09	0.08	-0.11	-0.10	0.07	0.06	0.03	-0.18	0.06	0.07	0.07	0.09	0.05	-0.17	-0.18	0.20	0.03	0.04	0.08	-0.01	0.03
OPINCITA	0.05	0.06	0.09	0.13	0.16	-0.10	-0.11	0.16	0.22	0.28	0.05	0.06	0.06	0.08	0.13	0.22	0.05	0.08	0.43	0.44	0.11	0.27	0.01	0.03
DIVICF	0.00	0.02	0.04	0.03	0.00	-0.05	0.00	0.03	0.02	-0.02	-0.03	0.00	0.01	0.01	-0.01	0.00	0.01	0.00	0.05	0.08	0.04	0.03	0.06	-0.02
DY	-0.07	-0.08	-0.09	-0.09	-0.08	-0.14	-0.14	-0.02	-0.01	-0.02	0.04	-0.02	0.00	0.02	0.04	0.02	0.10	0.15	0.05	0.37	0.08	0.04	0.02	-0.02
CH_INVISALES	0.00	-0.01	-0.04	-0.02	0.00	0.03	0.01	-0.03	-0.04	0.01	0.03	-0.03	-0.08	-0.13	-0.02	-0.15	0.07	0.06	0.08	-0.07	-0.01	-0.08	0.15	-0.40
CH_ARISALES	0.02	0.01	0.00	0.02	0.04	-0.02	-0.04	0.01	0.02	0.05	-0.02	-0.03	-0.05	-0.04	0.01	-0.06	0.02	0.03	0.01	-0.02	0.11	-0.07	0.26	-0.45
CH_SALESIGM	0.01	-0.02	-0.07	-0.10	-0.10	-0.05	-0.05	-0.06	-0.09	-0.08	-0.09	-0.07	-0.07	-0.03	-0.07	-0.14	-0.15	-0.12	-0.15	-0.09	-0.13	-0.20	-0.01	0.03
CH_SAISALES	-0.08	-0.12	-0.14	-0.19	-0.19	0.12	0.10	-0.15	-0.17	-0.10	-0.12	-0.14	-0.19	-0.20	-0.12	-0.05	-0.09	-0.09	-0.16	-0.01	-0.15	-0.02	0.09	-0.17
LABOUR	-0.01	-0.01	-0.02	-0.03	-0.04	0.04	0.03	-0.05	-0.09	-0.12	0.01	-0.04	-0.01	0.02	-0.01	-0.16	-0.02	-0.02	0.04	-0.01	0.02	-0.20	0.01	-0.51
NTC	-0.03	-0.04	-0.04	-0.05	-0.06	-0.02	0.06	-0.05	-0.06	-0.08	-0.14	0.01	-0.02	-0.08	-0.03	-0.12	-0.12	-0.14	0.01	-0.17	0.18	-0.02	0.13	-0.09
GFORECAST_12	-0.02	0.00	0.03	0.05	0.06	-0.11	-0.16	0.06	0.10	0.16	0.52	-0.03	-0.03	-0.04	-0.04	-0.06	0.88	0.73	-0.04	0.02	0.00	0.05	0.00	-0.05
REVISION_12	0.12	0.21	0.38	0.40	0.37	0.08	0.08	0.31	0.40	0.39	0.16	0.08	0.10	0.16	0.20	0.15	0.45	0.10	0.23	0.19	0.03	0.20	0.03	-0.04
REVISION_24	0.20	0.32	0.49	0.52	0.51	0.05	0.06	0.40	0.48	0.47	0.13	0.08	0.11	0.18	0.20	0.15	0.13	0.10	0.16	0.12	0.04	0.17	0.03	-0.01
REVISION_36	0.17	0.30	0.51	0.54	0.53	0.06	0.05	0.36	0.46	0.50	0.06	0.03	0.05	0.13	0.13	0.13	0.04	0.05	0.11	0.11	-0.01	0.23	0.08	0.05
RSTRENGTH_ALSI	0.51	0.69	0.92	0.75	0.63	-0.05	-0.09	0.75	0.73	0.56	0.00	0.13	0.17	0.18	0.11	0.13	-0.03	-0.05	0.12	0.07	-0.04	0.14	0.00	-0.01
RSTRENGTH_SUB	0.49	0.67	0.88	0.71	0.60	-0.06	-0.09	0.72	0.69	0.53	0.02	0.12	0.15	0.16	0.10	0.10	-0.01	-0.04	0.11	0.08	-0.02	0.14	0.01	-0.02
CH_RSTRENGTH_ALSI	0.37	0.49	0.61	0.27	0.02	-0.04	-0.05	0.49	0.31	0.16	-0.08	0.09	0.10	0.06	-0.10	-0.02	-0.08	-0.12	-0.05	-0.04	-0.07	-0.03	-0.02	0.06
CH_RSTRENGTH_SUB	0.35	0.47	0.58	0.26	0.02	-0.02	-0.03	0.46	0.28	0.14	-0.06	0.07	0.08	0.04	-0.12	-0.02	-0.07	-0.11	-0.05	-0.04	-0.05	-0.03	-0.01	0.06
WRSTRENGTH_ALSI	0.69	0.75	0.87	0.70	0.58	-0.06	-0.09	0.75	0.68	0.51	-0.03	0.12	0.15	0.14	0.08	0.10	-0.06	-0.08	0.09	0.03	-0.04	0.11	0.00	0.00
WRSTRENGTH_SUB	0.67	0.72	0.83	0.66	0.54	-0.06	-0.09	0.71	0.63	0.47	-0.02	0.10	0.13	0.13	0.07	0.07	-0.04	-0.07	0.08	0.04	-0.02	0.11	0.01	0.00
POS_SALES	0.02	0.00	-0.02	-0.07	-0.12	-0.02	-0.01	-0.05	-0.10	-0.22	0.00	-0.06	-0.08	-0.09	-0.08	-0.13	0.02	-0.04	-0.11	-0.07	0.00	-0.17	0.02	-0.26
POS_PRETAX	0.01	0.00	-0.04	-0.08	-0.12	-0.06	-0.04	-0.08	-0.16	-0.25	-0.07	-0.13	-0.16	-0.21	-0.23	-0.25	-0.01	-0.12	-0.27	-0.46	-0.03	-0.16	-0.03	0.05
POS_OP	-0.01	-0.02	-0.05	-0.08	-0.11	-0.01	-0.02	-0.09	-0.15	-0.24	-0.02	-0.07	-0.08	-0.10	-0.12	-0.14	-0.02	-0.11	-0.20	-0.38	-0.06	-0.17	-0.04	0.03
POS_NET	0.01	-0.01	-0.06	-0.11	-0.14	-0.06	-0.04	-0.09	-0.16	-0.24	-0.05	-0.13	-0.16	-0.21	-0.25	-0.24	0.03	-0.08	-0.27	-0.44	-0.03	-0.15	-0.04	0.06
POS_ROE	0.00	-0.03	-0.09	-0.16	-0.20	-0.04	-0.04	-0.10	-0.19	-0.28	-0.11	-0.15	-0.19	-0.26	-0.29	-0.28	0.02	-0.08	-0.50	-0.28	-0.06	-0.18	0.01	0.08

Appendix B.9. Weighted Correlation Matrix

Continued.

	CH_CURRENT	CH_QUICK	CH_INVTURN	INVITA	CH_INVITA	CH_INV	CH_SALES	CH_DEP	CH_DPS	CH_ROE	CAPGEAR	CH_CAPGEAR	ROA	GM	CH_EBTISALES	SALESICASH	LN_SALESICASH	CH_TA	CASHDEBT	WCITA	OPINCITA	DIVICF	DY	CH_INVISALES
INST_OWN																								
MAN_OWN																								
PE																								
EY																								
MV																								
LN_MV																								
BETA																								
MTB																								
VOL_3																								
LN_VOL_3																								
VOL_6																								
LN_VOL_6																								
VOL_12																								
LN_VOL_12																								
VOL_18																								
LN_VOL_18																								
VOL_24																								
LN_VOL_24																								
SDEV_VOL																								
LN_SDEV_VOL																								
VOLINOSHARES																								
LN_VOLINOSHARES																								
AGE																								
MOM_1																								
MOM_3																								
MOM_6																								
MOM_12																								
MOM_18																								
MOM_24																								
NOSHARES																								
LN_NOSHARES																								
MAXP_12																								
MAXP_24																								
MAXP_60																								
EARN																								
EARNG_3																								
EARNG_6																								
EARNG_12																								
EARNG_24																								
EARNG_60																								
EPS																								
LN_EPS																								
ROE																								
PRETAX_PM																								
ACCITA																								
CH_CF																								
CH_ARISALES																								
CH_ASSTURN																								
CH_CURRENT	1.00																							
CH_QUICK	0.88	1.00																						
CH_INVTURN	0.05	0.06	1.00																					
INVITA	-0.01	-0.01	-0.06	1.00																				
CH_INVITA	0.03	-0.21	-0.11	0.12	1.00																			
CH_INV	-0.04	-0.14	-0.50	-0.02	0.42	1.00																		
CH_SALES	0.00	0.01	0.03	-0.02	0.09	0.36	1.00																	
CH_DEP	-0.06	-0.10	-0.01	-0.13	0.01	0.27	0.39	1.00																
CH_DPS	0.08	0.10	0.03	0.08	-0.02	0.08	0.19	0.01	1.00															
CH_ROE	0.11	0.07	0.13	0.05	-0.10	-0.07	0.05	-0.04	0.10	1.00														
CAPGEAR	-0.11	-0.09	-0.01	0.04	0.03	-0.01	-0.04	-0.03	-0.07	-0.06	1.00													
CH_CAPGEAR	-0.25	-0.21	0.08	-0.07	0.07	0.13	0.10	0.15	-0.06	-0.10	0.09	1.00												
ROA	0.17	0.13	0.05	0.00	-0.07	0.04	0.19	0.03	0.25	0.29	-0.37	-0.13	1.00											
GM	-0.02	0.00	0.12	-0.19	-0.03	-0.03	-0.03	-0.01	0.02	0.08	-0.18	-0.09	0.30	1.00										
CH_EBTISALES	0.05	0.03	0.00	0.05	-0.07	0.03	0.00	0.00	0.11	0.18	-0.03	0.00	0.07	-0.03	1.00									
SALESICASH	-0.03	-0.04	0.00	0.09	0.06	-0.02	0.03	-0.02	0.04	-0.02	0.02	-0.08	0.04	0.10	-0.03	1.00								
LN_SALESICASH	-0.12	-0.12	-0.03	0.42	0.10	-0.01	0.02	-0.03	0.02	-0.03	0.02	-0.04	-0.06	-0.10	-0.01	0.64	1.00							
CH_TA	0.01	0.01	-0.07	-0.03	-0.11	0.41	0.49	0.26	0.16	0.05	-0.07	0.11	0.21	-0.06	0.10	-0.01	-0.09	1.00						
CASHDEBT	0.11	0.14	-0.16	0.01	-0.09	0.10	0.08	0.00	0.13	0.07	-0.13	-0.05	0.14	-0.03	0.12	-0.05	-0.11	0.06	1.00					
WCITA	0.06	0.09	0.01	0.63	0.00	-0.04	0.03	-0.12	0.08	0.05	-0.16	-0.05	0.18	-0.12	0.07	-0.05	0.02	0.02	0.14	1.00				
OPINCITA	0.10	0.08	0.03	0.12	-0.02	0.05	0.16	-0.04	0.23	0.10	-0.29	-0.10	0.79	0.29	0.03	0.10	0.12	0.13	0.06	0.18	1.00			
DIVICF	0.08	0.09	0.00	0.01	-0.07	-0.08	-0.04	0.01	-0.03	0.07	0.00	-0.02	0.02	-0.04	0.10	0.00	0.03	-0.02	0.03	0.00	0.01	1.00		
DY	-0.02	-0.04	0.00	0.10	0.02	-0.12	-0.12	-0.17	0.14	0.03	-0.07	-0.06	0.22	0.38	-0.04	0.00	-0.02	-0.10	-0.07	0.08	0.19	-0.07	1.00	
CH_INVISALES	-0.11	-0.19	-0.62	0.01	0.35	0.78	-0.17	-0.05	-0.05	-0.04	0.01	0.07	-0.06	-0.01	0.03	-0.05	-0.03	0.19	0.01	-0.04	-0.03	-0.02	-0.04	1.00
CH_ARISALES	0.08	0.20	-0.24	-0.05	-0.07	0.18	-0.21	-0.11	-0.03	0.02	0.01	0.02	-0.06	0.02	0.00	-0.05	-0.06	0.18	-0.01	-0.08	-0.10	-0.03	0.02	0.35
CH_SALESIGM	-0.08	-0.03	0.01	-0.04	-0.01	0.01	0.02	0.14	-0.20	-0.13	0.04	0.11	-0.09	-0.27	-0.08	-0.01	-0.02	0.03	0.05	-0.01	-0.18	-0.04	-0.08	-0.05
CH_SAISALES	-0.28	-0.39	-0.10	-0.05	0.09	-0.02	-0.25	0.01	-0.05	-0.29	0.05	0.11	0.01	-0.06	-0.01	-0.11	-0.17	-0.07	0.05	-0.07	-0.07	0.04	0.10	0.12
LABOUR	-0.14	-0.09	-0.13	0.04	-0.15	-0.07	-0.46	-0.16	-0.11	0.01	0.00	0.05	-0.08	-0.06	-0.01	-0.04	-0.03	0.03	-0.01	0.02	-0.16	0.03	-0.03	0.23
NTC	0.07	0.09	-0.04	0.20	0.07	0.02	-0.08	-0.10	-0.03	-0.01	0.12	0.00	-0.03	0.08	-0.02	0.16	0.16	-0.02	0.02	0.17	-0.01	0.09	0.01	0.03
GFORECAST_12	-0.01	0.00	-0.05	-0.01	0.03	0.07	0.00	0.04	0.14	0.03	0.07	-0.08	0.02	0.05	0.01	-0.02	-0.02	0.01	0.02	-0.26	0.03	-0.02	-0.04	0.08
REVISION_12	0.08	0.10	0.00	-0.06	-0.02	0.06	0.12	0.00	0.30	0.11	-0.04	-0.08	0.23	0.11	0.05	0.03	-0.04	0.13	0.12	0.02	0.23	0.00	0.00	0.01
REVISION_24	0.09	0.11	0.04	-0.01	0.01	0.07	0.17	0.03	0.35	0.06	-0.07	-0.09	0.20	0.11	0.03	0.02	-0.01	0.14	0.11	0.01	0.23	-0.01	-0.06	0.01
REVISION_36	0.07	0.09	0.09	-0.01	0.01	0.04	0.20	-0.08	0.35	0.07	-0.11	-0.18	0.23	0.11	0.01	-0.04	-0.06	0.06	0.17	-0.07	0.30	0.03	-0.09	-0.07
RSTRENGTH_ALSI	0.07	0.10	0.03	0.07	-0.10	-0.03	0.06	-0.09	0.28	0.17	-0.12	-0.05	0.14	0.09	0.06	-0.02	0.01	0.04	0.12	0.08	0.12	0.04	-0.08	-0.04
RSTRENGTH_SUB	0.06	0.10	0.03	0.06	-0.10	-0.05	0.04	-0.08	0.26	0.16	-0.13	-0.05	0.14	0.09	0.05	-0.04	0.00	0.03	0.12	0.06	0.12	0.05	-0.08	-0.03
CH_RSTRENGTH_ALSI	0.05	0.07	0.04	0.02	-0.07	-0.07	-0.02	-0.05	0.03	0.05	-0.04	-0.05	-0.06	0.00	0.02	-0.03	0.01	-0.08	0.05	0.06	-0.01	0.06	-0.10	-0.04
CH_RSTRENGTH_SUB	0.05	0.07	0.04	0.01	-0.07	-0.08	-0.02	-0.04	0.02	0.05	-0.03	-0.05	-0.05	0.00	0.02	-0.03	0.00	-0.08	0.04	0.04	0.00	0.05	-0.10	-0.05
WRSTRENGTH_ALSI	0.05	0.09	0.02	0.07	-0.09	-0.02	0.05	-0.06	0.23	0.16	-0.11	-0.04	0.09	0.09	0.06	-0.01	0.03	0.02	0.12	0.08	0.09	0.03	-0.11	-0.03
WRSTRENGTH_SUB	0.05	0.09	0.02	0.06	-0.10	-0.04	0.03	-0.06	0.21	0.15	-0.12	-0.04	0.09	0.08	0.06	-0.03	0.03	0.01	0.11	0.06	0.09	0.04	-0.12	-0.03
POS_SALES	0.01	-0.01	-0.01	-0.12	-0.06	-0.23	-0.60	-0.21	-0.18	-0.01	0.08	-0.05	-0.14	0.16	0.01	0.00	0.00	-0.35	-0.02	-0.10	-0.12	0.05	0.09	0.08
POS_PRETAX	-0.09	-0.04	-0.06	0.04	0.05	-0.05	-0.10	-0.01	-0.11	-0.15	0.26	0.05	-0.48	-0.13	-0.05	0.04	0.17	-0.15	-0.05	-0.05	-0.38	-0.01	-0.13	0.01
POS_OP	-0.05	-0.01	-0.06	0.00	0.01	-0.07	-0.07	0.00	-0.09	-0.06	0.23	0.02	-0.42	-0.19	0.01	-0.01	0.08	-0.10	-0.03	-0.02	-0.49	0.00	-0.15	-0.01
POS_NET	-0.09	-0.04	-0.07	0.04	0.04	-0.06	-0.10	-0.02	-0.12	-0.15	0.26	0.05	-0.50	-0.17	-0.05	0.01	0.14	-0.15	-0.06	-0.04	-0.38	-0.01	-0.11	0.00
POS_ROE	-0.12	-0.07	-0.02	-0.17	0.07	-0.10	-0.19	-0.06	-0.20	-0.17	0.13	0.10	-0.47	0.09	-0.10	-0.02	0.01	-0.24	-0.09	-0.20	-0.38	0.03	-0.04	-0.01

Appendix B.9. Weighted Correlation Matrix

Continued.

	CH_ARISALES	CH_SALESIGM	CH_SAISALES	LABOUR	NTC	GFORECAST_12	REVISION_12	REVISION_24	REVISION_36	RSTRENGTH_ALSI	RSTRENGTH_SUB	CH_RSTRENGTH_ALSI	CH_RSTRENGTH_SUB	WRSTRENGTH_ALSI	WRSTRENGTH_SUB	POS_SALES	POS_PRETAX	POS_OP	POS_NET	POS_ROE
INST_OWN																				
MAN_OWN																				
PE																				
EY																				
MV																				
LN_MV																				
BETA																				
MTB																				
VOL_3																				
LN_VOL_3																				
VOL_6																				
LN_VOL_6																				
VOL_12																				
LN_VOL_12																				
VOL_18																				
LN_VOL_18																				
VOL_24																				
LN_VOL_24																				
SDEV_VOL																				
LN_SDEV_VOL																				
VOLINOSHARES																				
LN_VOLINOSHARES																				
AGE																				
MOM_1																				
MOM_3																				
MOM_6																				
MOM_12																				
MOM_18																				
MOM_24																				
NOSHARES																				
LN_NOSHARES																				
MAXP_12																				
MAXP_24																				
MAXP_60																				
EARN																				
EARNG_3																				
EARNG_6																				
EARNG_12																				
EARNG_24																				
EARNG_60																				
EPS																				
LN_EPS																				
ROE																				
PRETAX_PM																				
ACCITA																				
CH_CF																				
CH_ARISALES																				
CH_ASSTURN																				
CH_CURRENT																				
CH_QUICK																				
CH_INVTURN																				
INVITA																				
CH_INVITA																				
CH_INV																				
CH_SALES																				
CH_DEP																				
CH_DPS																				
CH_ROE																				
CAPGEAR																				
CH_CAPGEAR																				
ROA																				
GM																				
CH_EBTISALES																				
SALESICASH																				
LN_SALESICASH																				
CH_TA																				
CASHIDEBT																				
WCITA																				
OPINCITA																				
DIVICF																				
DY																				
CH_INVISALES																				
CH_ARISALES	1.00																			
CH_SALESIGM	-0.05	1.00																		
CH_SAISALES	-0.06	0.02	1.00																	
LABOUR	0.27	0.03	0.32	1.00																
NTC	0.13	-0.10	-0.06	0.06	1.00															
GFORECAST_12	0.02	-0.12	-0.11	-0.02	-0.09	1.00														
REVISION_12	-0.03	-0.16	-0.16	-0.06	0.03	0.17	1.00													
REVISION_24	-0.03	-0.10	-0.15	-0.12	0.00	0.17	0.74	1.00												
REVISION_36	-0.03	-0.21	-0.15	-0.17	-0.07	0.04	0.57	0.74	1.00											
RSTRENGTH_ALSI	-0.02	-0.05	-0.16	-0.04	-0.06	0.02	0.37	0.47	0.49	1.00										
RSTRENGTH_SUB	-0.01	-0.04	-0.12	-0.02	-0.08	0.06	0.33	0.41	0.43	0.95	1.00									
CH_RSTRENGTH_ALSI	-0.06	0.05	-0.07	0.01	-0.03	-0.06	0.12	0.16	0.15	0.66	0.64	1.00								
CH_RSTRENGTH_SUB	-0.05	0.05	-0.05	0.01	-0.04	-0.04	0.09	0.13	0.12	0.63	0.67	0.96	1.00							
WRSTRENGTH_ALSI	-0.01	-0.04	-0.15	-0.04	-0.05	0.00	0.30	0.40	0.43	0.93	0.89	0.65	0.62	1.00						
WRSTRENGTH_SUB	0.00	-0.03	-0.10	-0.02	-0.06	0.02	0.26	0.35	0.37	0.89	0.93	0.62	0.65	0.96	1.00					
POS_SALES	0.12	-0.02	0.19	0.31	0.10	0.03	-0.03	-0.07	-0.14	-0.05	-0.04	0.05	0.05	-0.03	-0.02	1.00				
POS_PRETAX	0.02	0.11	-0.10	-0.01	0.09	0.15	-0.09	-0.10	-0.13	-0.07	-0.05	0.07	0.07	-0.04	-0.03	0.45	1.00			
POS_OP	0.04	0.09	-0.08	0.01	0.01	0.15	-0.09	-0.10	-0.13	-0.07	-0.07	0.04	0.04	-0.05	-0.05	0.39	0.88	1.00		
POS_NET	0.03	0.12	-0.08	-0.01	0.09	0.17	-0.08	-0.09	-0.16	-0.08	-0.07	0.06	0.07	-0.06	-0.04	0.44	0.97	0.86	1.00	
POS_ROE	0.04	0.14	0.04	0.01	0.13	0.12	-0.10	-0.11	-0.07	-0.10	-0.09	0.06	0.07	-0.07	-0.06	0.52	0.69	0.60	0.70	1.00

Appendix C

This appendix refers to Chapter 5: Identification of Extreme Performance Signals

Appendix C.1. Significant Winner Signals

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between winner and non-winner medians is shown for each variable. The highlighted cells indicate those variables which are significantly different between winner and non-winner shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the winner and non-winner portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger in winner shares (+) , smaller in winner shares (-) or not significantly different between the two portfolios (blank). If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

	T	Median Test P-Value Winner # Control Ha: diff != 0	Mean Winner	Mean Non-winner	Mean Difference	Median Winner	Median Non-winner	Median Difference	Summary
INST_OWN	8.4854	0.0030	0.0283	0.0194	0.0089	0.0000	0.0000	0.0000	
MAN_OWN	0.0274	0.8685	0.4899	0.4744	-0.0045	0.4500	0.4600	-0.0100	
PE	0.3177	0.5730	18.1412	14.9673	1.1539	9.4000	9.9000	-0.5000	
EY	0.8038	0.4371	0.1122	0.1070	0.0052	0.0971	0.0952	0.0018	
MV	0.5445	0.4806	3052.7181	3798.3497	-745.6336	588.7200	623.1100	-34.3900	
LN_MV	0.1744	0.6782	6.5531	6.6091	-0.0260	6.4217	6.4529	-0.0312	
BETA	0.8288	0.4278	0.5892	0.5792	0.0100	0.5840	0.5400	0.0440	
MTB	49.9706	0.0000	1.7092	2.0729	-0.3637	1.1700	1.4200	-0.2500	-
VOL_3	0.3755	0.5400	2.4978	2.5353	-0.0375	0.7040	0.7428	-0.0388	
LN_VOL_3	0.4823	0.4874	-0.5077	-0.4119	-0.0958	-0.3461	-0.2921	-0.0541	
VOL_6	0.0072	0.9323	1.8668	1.7552	0.1116	0.6490	0.6446	0.0044	
LN_VOL_6	0.0072	0.9323	-0.6480	-0.6133	-0.0348	-0.4324	-0.4365	0.0042	
VOL_12	0.3174	0.5732	1.6545	1.4842	0.1703	0.6041	0.5809	0.0232	
LN_VOL_12	0.3639	0.5464	-0.7141	-0.7381	0.0240	-0.5038	-0.5418	0.0379	
VOL_18	0.0583	0.8125	1.4964	1.3844	0.1140	0.5796	0.5841	-0.0043	
LN_VOL_18	0.0789	0.7818	-0.8090	-0.7755	-0.0335	-0.5424	-0.5359	-0.0065	
VOL_24	0.3174	0.5732	1.4217	1.3497	0.0721	0.5857	0.5822	-0.0155	
LN_VOL_24	0.3639	0.5464	-0.8663	-0.7840	-0.0824	-0.5679	-0.5388	-0.0291	
SDEV_VOL	5.9715	0.0146	2.2615	1.5982	0.6653	0.6407	0.5325	0.1082	+
LN_SDEV_VOL	6.3981	0.0114	-0.5743	-0.7087	0.1344	-0.4344	-0.6238	0.1893	+
VOLINOSHARES	2.3130	0.1283	0.0015	0.0015	0.0000	0.0004	0.0005	-0.0001	
LN_VOLINOSHARES	1.9647	0.1610	-7.9524	-7.8335	-0.1189	-7.7350	-7.8124	-0.1226	
AGE	0.0438	0.8342	9.9962	10.3878	-0.3914	8.5222	8.6139	-0.0917	
MOM_1	0.0118	0.9135	0.0222	0.0140	0.0082	0.0072	0.0065	0.0007	
MOM_3	1.2616	0.2613	0.0650	0.0456	0.0195	0.0388	0.0308	0.0083	
MOM_6	1.4489	0.2287	0.1275	0.0928	0.0347	0.0866	0.0516	0.0150	
MOM_12	0.1301	0.7183	0.2042	0.2033	0.0009	0.1019	0.1076	-0.0057	
MOM_18	0.1631	0.6863	0.3113	0.3450	-0.0336	0.1573	0.1673	-0.0100	
MOM_24	0.4976	0.4806	0.4639	0.4858	-0.0019	0.2196	0.2029	0.0167	
NOSHARES	13.5032	0.0002	207647.9194	181135.6169	26512.3025	97556.0000	105641.0000	-8083.0000	-
LN_NOSHARES	10.2501	0.0014	11.6317	11.5610	0.0706	11.4885	11.5678	-0.0793	-
MAXP_12	3.8829	0.0550	0.8252	0.8045	0.0207	0.8704	0.8444	0.0259	
MAXP_24	1.4913	0.2220	0.7510	0.7241	0.0269	0.7846	0.7700	0.0146	
MAXP_60	0.0597	0.8070	0.8152	0.8054	0.0098	0.8223	0.8189	0.0035	
EARN	1.4368	0.2307	158204.1067	251824.1444	-93420.0378	51210.0000	56800.0000	-5590.0000	
EARNG_3	0.2275	0.6334	0.0060	0.0015	0.0046	0.0000	0.0000	0.0000	
EARNG_6	0.2966	0.5860	0.0179	0.0048	0.0131	0.0000	0.0000	0.0000	
EARNG_12	5.1011	0.0239	0.0347	0.0130	0.0217	0.0181	0.0148	0.0033	+
EARNG_24	0.2684	0.6044	0.0563	0.0453	0.0110	0.0333	0.0321	0.0012	
EARNG_60	9.8538	0.0017	0.1208	0.1570	-0.0361	0.0705	0.0928	-0.0224	-
EPS	2.1828	0.1414	1.3149	1.4818	-0.1668	0.5500	0.6100	-0.0600	
LN_EPS	2.7842	0.0964	-0.4514	-0.3139	-0.1375	-0.3711	-0.2614	-0.1097	
ROE	17.5128	0.0000	0.1451	0.2381	-0.0930	0.1692	0.1908	-0.0216	-
PRETAX_PM	51.6723	0.0000	0.0220	0.0864	-0.0764	0.0686	0.0860	-0.0174	-
ACCITA	8.2848	0.0040	-0.0312	-0.0218	-0.0094	-0.0268	-0.0151	-0.0115	-
CH_CF	1.2913	0.2558	0.2258	0.1641	0.0616	0.1000	0.0646	0.0354	
CH_ARISALES	1.7498	0.1859	-0.3458	0.1709	-0.5167	0.0926	0.1267	-0.0341	
CH_ASSTURN	4.1529	0.0416	0.0644	0.0635	0.0208	0.0337	0.0138	0.0199	+
CH_CURRENT	2.0513	0.1521	0.0399	0.0351	0.0048	0.0064	0.0000	0.0064	
CH_QUICK	11.2152	0.0008	0.0137	0.0464	-0.0327	-0.0110	0.0000	-0.0110	-
CH_INVTURN	2.5605	0.1098	-1.3638	1.4478	-2.8115	0.3670	0.2379	0.1291	
INVITA	0.4451	0.5047	0.1777	0.1690	0.0087	0.1567	0.1540	0.0047	
CH_INVITA	20.8695	0.0000	0.0030	0.0000	0.0030	0.0028	0.0000	0.0028	+
CH_INV	0.0225	0.8807	0.2531	0.3543	-0.1012	0.1448	0.1329	0.0119	
CH_SALES	0.9201	0.3374	0.1874	0.2382	-0.0708	0.1431	0.1472	-0.0041	
CH_DEP	24.1784	0.0000	0.1716	0.4735	-0.3019	0.1099	0.1787	-0.0688	-
CH_DPS	2.7171	0.0993	0.1520	0.1404	0.0115	0.1667	0.1500	0.0167	
CH_ROE	1.2399	0.2655	-0.0433	-0.0355	-0.0079	0.0004	-0.0010	0.0014	
CAPGEAR	36.4044	0.0000	0.2552	0.2075	0.0478	0.2395	0.1841	0.0524	+
CH_CAPGEAR	0.1211	0.7278	0.1407	0.3998	-0.2591	-0.0177	-0.0177	0.0000	
ROA	11.9656	0.0005	0.0530	0.0697	-0.0167	0.0659	0.0726	-0.0067	-
GM	4.7412	0.0294	0.2351	0.2281	0.0069	0.2150	0.1853	0.0297	+
CH_EBITSALES	0.0364	0.8487	0.0780	0.0195	0.0585	-0.0371	-0.0375	0.0004	
SALESTCASH	43.5268	0.0000	40.1439	48.7121	-8.5682	13.7916	9.6087	4.1829	+
LN_SALESTCASH	45.5085	0.0000	2.6977	2.5069	0.1908	2.6241	2.2920	0.3321	+
CH_TA	12.3893	0.0004	0.1114	0.1944	-0.0831	0.0968	0.1248	-0.0281	-
CASHTDEBT	0.1383	0.7100	1.2095	0.8851	0.3244	0.0299	0.0439	-0.0140	
WCITA	1.1984	0.2736	0.5542	0.5783	-0.0241	0.5961	0.6231	-0.0270	
OPINCITA	51.4251	0.0000	0.0803	0.1027	-0.0224	0.0798	0.1007	-0.0209	-
DIVTCF	4.3993	0.0360	-0.8721	0.3597	-1.0318	0.0000	0.0000	0.0000	
DY	3.9805	0.0460	0.0307	0.0324	-0.0017	0.0229	0.0253	-0.0024	-
CH_INVISALES	1.3393	0.2472	0.0252	0.0385	-0.0133	-0.0433	-0.0328	-0.0104	
CH_ARISALES	7.3954	0.0065	-0.0482	-0.0100	-0.0381	-0.0592	-0.0214	-0.0379	-
CH_SALESIGM	2.1971	0.1383	0.0024	-0.1120	0.1145	0.0324	0.0004	0.0320	
CH_SALSALES	1.4547	0.2278	-0.0465	-0.0020	-0.0445	-0.0262	-0.0436	0.0173	
LABOUR	0.0000	1.0000	-0.1684	-0.1686	0.0186	-0.1568	-0.1562	-0.0005	
NTC	3.8783	0.0490	79.6571	84.3687	-4.7117	69.2124	63.5660	5.6465	+
GFORECAST_12	19.9761	0.0000	2.8321	3.2392	-0.3071	1.2650	1.6600	-0.3950	-
REVISION_12	5.9541	0.0147	-0.1248	-0.0914	-0.0334	-0.1107	-0.0792	-0.0315	-
REVISION_24	6.0353	0.0140	-0.1040	-0.0482	-0.0558	-0.1085	-0.0548	-0.0537	-
REVISION_36	1.8414	0.1748	-0.0813	0.0334	-0.1147	-0.0541	0.0000	-0.0541	
RSTRENGTH_ALSI	0.3864	0.5342	0.5140	0.5062	0.0078	0.5034	0.5101	-0.0067	
RSTRENGTH_SUB	0.3288	0.5664	0.5047	0.5080	-0.0032	0.4870	0.5073	-0.0103	
CH_RSTRENGTH_ALSI	0.0205	0.8860	0.0638	0.0571	0.0265	0.0414	0.0375	0.0039	
CH_RSTRENGTH_SUB	0.1264	0.7201	0.0800	0.0560	0.0240	0.0372	0.0328	0.0043	
WRSTRENGTH_ALSI	0.0622	0.7743	0.5146	0.5078	0.0068	0.5071	0.5107	-0.0036	
WRSTRENGTH_SUB	1.3151	0.2515	0.5057	0.5084	-0.0036	0.4909	0.5115	-0.0206	
POS_SALES	0.1775	0.6736	13.1902	12.2799	0.9103	9.0000	9.0000	0.0000	
POS_PRETAX	5.5071	0.0189	15.1802	13.8084	1.5708	11.0000	10.0000	1.0000	+
POS_OP	24.7032	0.0000	15.7361	13.2257	2.5134	12.0000	10.0000	2.0000	+
POS_NET	15.8393	0.0001	14.8279	13.7941	1.0339	12.0000	11.0000	1.0000	+
POS_ROE	13.8410	0.0002	15.5633	12.7573	2.8060	11.0000	9.0000	2.0000	+

Appendix C.2. Significant Loser Signals

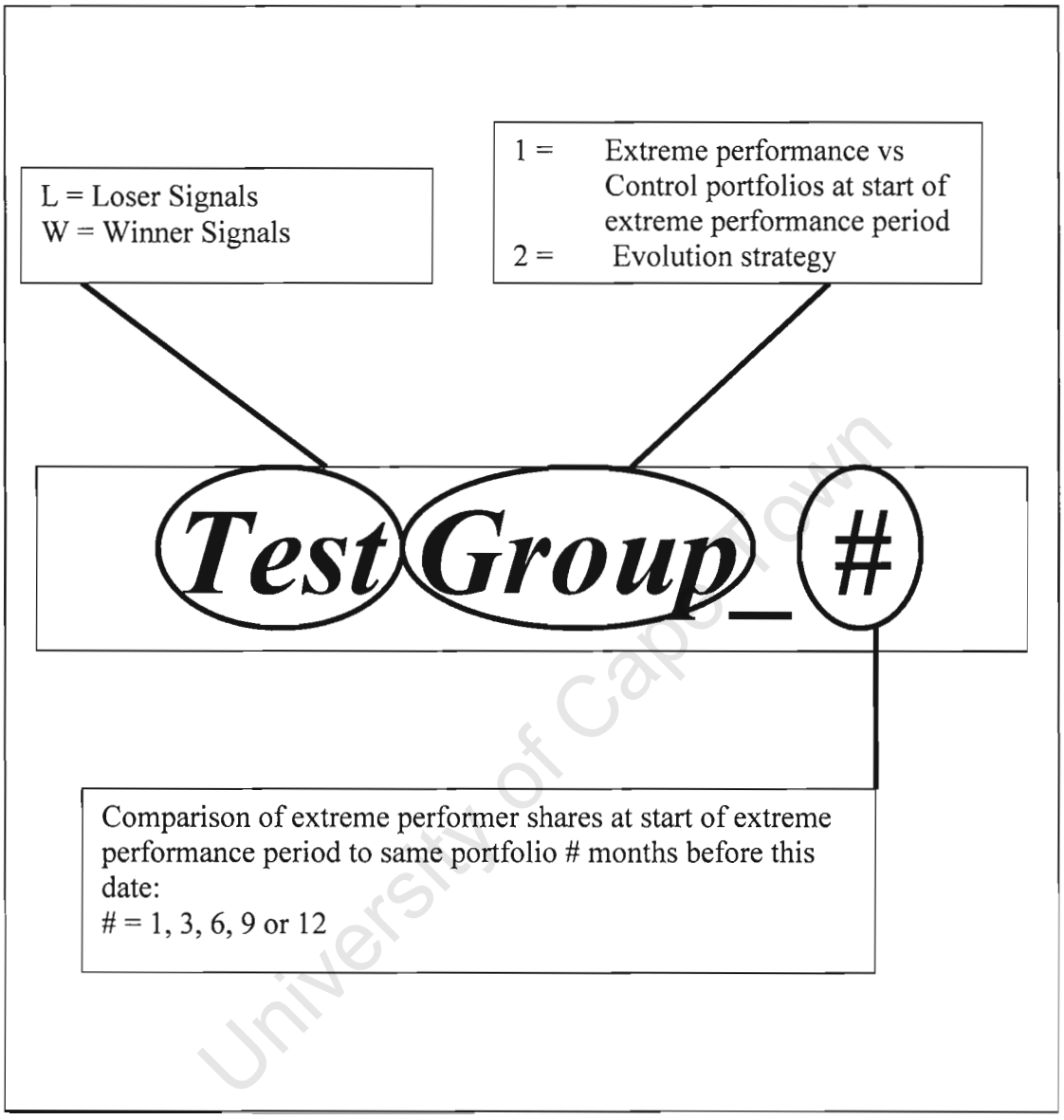
The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between loser and non-loser medians is shown for each variable. The highlighted cells indicate those variables which are significantly different between loser and non-loser shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the loser and non-loser portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger in loser shares (+) , smaller in loser shares (-) or not significantly different between the two portfolios (blank). If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

	T	Median Test P-Value Loser # Contro' Ha: diff != 0	Mean Loser	Mean Non-Loser	Mean Difference	Median Loser	Median Non-Loser	Median Difference	Summary
INST_OWN	2.1305	0.1444	0.0076	0.0210	-0.0134	0.0000	0.0000	0.0000	
MAN_OWN	1.9710	0.1803	0.5189	0.4724	0.0465	0.5700	0.4600	0.1100	
PE	13.8068	0.0002	16.1412	15.0373	1.1039	11.8000	9.7000	2.1000	+
EY	24.1214	0.0000	0.0990	0.1083	-0.0093	0.0794	0.0962	-0.0168	-
MV	0.4434	0.5055	3477.6727	3736.4262	-258.7534	636.6700	614.5200	24.1500	
LN_MV	0.0847	0.7710	6.6344	6.6040	0.0304	6.4584	6.4483	0.0131	
BETA	1.2171	0.2698	0.5588	0.5821	-0.0233	0.5320	0.5610	-0.0290	
MTB	20.2230	0.0000	2.6484	1.9843	0.6641	1.7300	1.3600	0.3700	+
VOL_3	0.4315	0.5113	2.6830	2.5188	0.1642	0.6900	0.7427	-0.0527	
LN_VOL_3	0.6350	0.4255	-0.4056	-0.4233	0.0177	-0.3708	-0.2921	-0.0787	
VOL_6	4.9555	0.0260	1.9830	1.7486	0.2340	0.5414	0.6547	-0.1133	-
LN_VOL_6	4.7421	0.0294	-0.6442	-0.6146	-0.0296	-0.6129	-0.4206	-0.1922	-
VOL_12	4.1606	0.0414	1.7240	1.4836	0.2404	0.5055	0.5810	-0.0855	-
LN_VOL_12	4.1604	0.0414	-0.7421	-0.7350	-0.0071	-0.6822	-0.5235	-0.1586	-
VOL_18	1.0329	0.3095	1.6594	1.3745	0.2849	0.5574	0.5855	-0.0281	
LN_VOL_18	1.0329	0.3095	-0.7120	-0.7545	0.0726	-0.5844	-0.5331	-0.0513	
VOL_24	0.0774	0.7809	1.6075	1.3364	0.2711	0.5722	0.5810	-0.0089	
LN_VOL_24	0.0774	0.7809	-0.7050	-0.7999	0.0949	-0.5583	-0.5425	-0.0159	
SDEV_VOL	0.5312	0.4661	2.1109	1.8297	0.4812	0.4990	0.5451	-0.0461	
LN_SDEV_VOL	0.4662	0.4948	-0.8218	-0.7006	0.0788	-0.6928	-0.6028	-0.0900	
VOLINOSHARES	1.9122	0.1667	0.0016	0.0014	0.0001	0.0004	0.0005	-0.0001	
LN_VOLINOSHARES	3.0881	0.0798	-7.8811	-7.8431	-0.0380	-7.7491	-7.6128	-0.1363	
AGE	49.7497	0.0000	8.7273	10.4741	-1.7468	7.4778	8.7833	-1.3056	-
MOM_1	0.8287	0.4278	0.0052	0.0156	-0.0105	0.0000	0.0089	-0.0089	
MOM_3	0.5786	0.4488	0.0304	0.0491	-0.0187	0.0272	0.0324	-0.0053	
MOM_6	2.1051	0.1468	0.0892	0.0988	-0.0295	0.0246	0.0552	-0.0307	
MOM_12	14.0969	0.0002	0.1045	0.2111	-0.1066	0.0087	0.1140	-0.1053	-
MOM_18	22.3749	0.0000	0.1612	0.3554	-0.1943	-0.0073	0.1758	-0.1831	-
MOM_24	23.2725	0.0000	0.2879	0.5005	-0.2126	0.0362	0.2214	-0.1852	-
NOSHARES	1.0874	0.2971	187946.4792	183723.8632	4222.6160	117234.0000	104966.0000	12268.0000	
LN_NOSHARES	1.0802	0.2987	11.8389	11.5631	0.0758	11.6719	11.5651	0.1068	
MAXP_12	18.1750	0.0000	0.7731	0.8095	-0.0364	0.8000	0.8486	-0.0486	-
MAXP_24	20.7235	0.0000	0.8745	0.7313	-0.0568	0.7217	0.7771	-0.0553	-
MAXP_60	2.9321	0.0868	0.6015	0.6068	-0.0053	0.6552	0.6160	0.0392	
EARN	0.5683	0.4509	177121.3374	246483.1894	-69371.8520	55756.0000	56623.0000	-867.0000	
EARNG_3	1.9247	0.1653	0.0032	0.0021	0.0011	0.0000	0.0000	0.0000	
EARNG_6	3.0928	0.0786	0.0080	0.0060	0.0020	0.0000	0.0000	0.0000	
EARNG_12	2.0935	0.1478	0.0317	0.0140	0.0178	0.0142	0.0154	-0.0012	
EARNG_24	4.3362	0.0373	0.0534	0.0461	0.0073	0.0232	0.0328	-0.0096	-
EARNG_60	13.3656	0.0003	0.1614	0.1522	0.0092	0.1179	0.0868	0.0311	+
EPS	7.2209	0.0072	1.5792	1.4541	0.1251	0.4300	0.6200	-0.1900	-
LN_EPS	1.5214	0.2374	-0.3372	-0.3285	-0.0087	-0.5110	-0.2614	-0.2496	
ROE	10.8121	0.0010	0.3709	0.2170	0.1539	0.2107	0.1814	0.0293	+
PRETAX_PM	0.1138	0.7358	0.0831	0.0699	0.0132	0.0914	0.0839	0.0075	
ACCITA	2.3134	0.1283	-0.0301	-0.0223	-0.0078	-0.0216	-0.0153	-0.0063	
CH_CF	1.2044	0.2724	0.5459	0.1430	0.4028	0.1202	0.0667	0.0535	
CH_ARISALES	30.3352	0.0000	0.2125	0.1096	0.1029	0.2263	0.1228	0.1035	+
CH_ASSTURN	5.5092	0.0189	0.0526	0.0667	-0.0141	-0.0087	0.0184	-0.0250	-
CH_CURRENT	0.1433	0.7050	0.0452	0.0350	0.0102	0.0032	0.0000	0.0032	
CH_QUICK	1.4274	0.2322	0.0468	0.0425	0.0043	-0.0365	0.0000	-0.0365	
CH_INVTURN	8.1575	0.0043	0.9259	1.1358	-0.2099	0.0617	0.2506	-0.1889	-
INVITA	5.9907	0.0144	0.1533	0.1712	-0.0179	0.1361	0.1558	-0.0197	-
CH_INVITA	0.0016	0.9686	0.0067	-0.0003	0.0069	0.0000	0.0000	0.0000	
CH_INV	12.4088	0.0004	0.8696	0.3095	0.5603	0.2656	0.1292	0.1366	+
CH_SALES	4.2158	0.0401	0.3267	0.2232	0.1055	0.1217	0.1481	-0.0263	-
CH_DEP	16.8042	0.0000	0.7289	0.4192	0.3097	0.2506	0.1656	0.0850	+
CH_DPS	29.1658	0.0000	0.0239	0.1512	-0.1272	0.0478	0.1622	-0.1145	-
CH_ROE	0.0033	0.9540	0.0683	-0.0426	0.1110	-0.0002	-0.0003	0.0002	
CAPGEAR	0.0335	0.8547	0.2057	0.2132	-0.0075	0.1902	0.1910	-0.0008	
CH_CAPGEAR	10.9962	0.0009	0.4779	0.3625	0.1154	0.0135	-0.0260	0.0395	+
ROA	1.3118	0.2521	0.0715	0.0678	0.0039	0.0956	0.0718	-0.0052	
GM	4.9687	0.0258	0.2216	0.2294	-0.0079	0.1522	0.1903	-0.0381	-
CH_EBITSALES	5.0994	0.0239	0.3024	0.0040	0.2984	-0.0111	-0.0383	0.0271	+
SALESTCASH	39.5719	0.0000	25.5793	49.5180	-23.9387	7.2024	10.7330	-3.5306	-
LN_SALESTCASH	34.1018	0.0000	2.1793	2.5552	-0.3759	2.0308	2.3672	-0.3364	-
CH_TA	26.3647	0.0000	0.3334	0.1742	0.1592	0.1751	0.1180	0.0571	+
CASHDEBT	1.1031	0.2936	2.8696	0.7877	2.0822	0.0638	0.0435	0.0203	
WCITA	11.5689	0.0007	0.6229	0.5721	0.0508	0.7183	0.6080	0.1103	+
OPINCITA	0.3255	0.5683	0.0996	0.1003	-0.0005	0.0934	0.0967	-0.0034	
DIVICF	1.4959	0.2213	-1.0426	0.3587	-1.4013	0.0000	0.0000	0.0000	
DY	6.8537	0.0089	0.0335	0.0321	0.0014	0.0203	0.0253	-0.0050	-
CH_INVISALES	2.7362	0.0981	0.2308	0.0247	0.2061	-0.0177	-0.0372	0.0195	
CH_ARISALES	6.8150	0.0101	0.0742	-0.0205	0.0946	0.0124	-0.0283	0.0408	+
CH_SALESIGM	0.9719	0.3242	0.0126	-0.1084	0.1211	0.0000	0.0017	-0.0017	
CH_SALSALES	2.3534	0.1250	0.0672	-0.0143	0.0816	0.0832	-0.0436	0.1268	
LABCOR	1.0553	0.3043	-0.1990	-0.1847	-0.0143	-0.1153	-0.1566	0.0413	
NTC	3.6219	0.0570	85.3508	83.7443	1.6065	81.5684	84.5234	-2.9570	
GFORECAST_12	0.5203	0.4707	2.5038	3.2652	-0.7615	1.6000	1.8200	-0.0200	
REVISION_12	0.8190	0.3655	-0.0778	-0.0964	0.0186	-0.0685	-0.0813	0.0128	
REVISION_24	0.3603	0.5483	-0.0593	-0.0535	-0.0058	-0.0518	-0.0598	0.0080	
REVISION_36	1.1240	0.2891	-0.0778	0.0257	-0.1033	-0.1883	0.0000	-0.1883	
RSTRENGTH_ALSI	12.0839	0.0006	0.4599	0.5107	-0.0508	0.4348	0.5135	-0.0787	-
RSTRENGTH_SUB	7.8655	0.0050	0.4662	0.5109	-0.0447	0.4405	0.5111	-0.0706	-
CH_RSTRENGTH_ALSI	0.4189	0.5175	0.0803	0.0598	0.0004	0.0466	0.0368	0.0118	
CH_RSTRENGTH_SUB	0.0019	0.9656	0.0617	0.0583	0.0033	0.0318	0.0335	-0.0017	
WRSTRENGTH_ALSI	6.0485	0.0139	0.4706	0.5115	-0.0407	0.4589	0.5141	-0.0551	-
WRSTRENGTH_SUB	4.4696	0.0348	0.4741	0.5117	-0.0376	0.4648	0.5126	-0.0480	-
POS_SALES	35.1639	0.0000	11.0274	12.4804	-1.4530	8.0000	9.0000	-1.0000	-
POS_PRETAX	2.4042	0.1210	13.3354	13.8134	-0.4780	10.0000	11.0000	-1.0000	
POS_OP	17.5537	0.0000	12.6625	13.5638	-0.9013	9.0000	11.0000	-2.0000	-
POS_NET	3.1329	0.0767	14.0515	13.8842	0.1574	10.0000	11.0000	-1.0000	
POS_ROE	19.8587	0.0000	10.6224	13.2482	-2.6258	7.0000	9.0000	-2.0000	-

Appendix C.3. Key for Names of Tests

The key below shows how to interpret the titles for each of the groups of tests to find variables which are significantly different among extreme performing portfolios.



Appendix C.4. Significant Winner Evolution Signals: 1 Month

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between winner distributions at the start and one month before the start of extreme performance is shown for each variable. The highlighted cells indicate those variables which are significantly different between these shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the two portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger (+), smaller (-) or not significantly different (blank) in winner shares at the start of extreme performance as compared to the same shares one month before the start of extreme performance. If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

Variable	Median Test		Mean			Median			Summary
	Period 0 ≠ Period -1								
	T	Ha: diff != 0	Period 0	Period -1	Difference	Period 0	Period -1	Difference	
INST_OWN	0.8336	0.3612	0.0263	0.0264	0.0020	0.0000	0.0000	0.0000	
MAN_OWN	0.1630	0.6864	0.4699	0.4835	-0.0136	0.4500	0.4800	-0.0300	
PE	0.0053	0.9418	18.1412	15.8086	0.3326	9.4000	9.5000	-0.1000	
EY	0.0143	0.9049	0.1122	0.1115	0.0007	0.0971	0.0971	0.0000	
MV	0.0089	0.9248	3052.7161	3045.8229	6.8932	588.7200	587.8600	0.8600	
LN_MV	0.0023	0.9621	6.5831	6.5727	0.0104	6.4217	6.4128	0.0089	
BETA	0.0000	0.9977	0.5892	0.5891	0.0001	0.5840	0.5840	0.0000	
MTB	0.0541	0.8161	1.7092	1.6613	0.0478	1.1700	1.1500	0.0200	
VOL_3	0.2147	0.6431	2.4978	2.5956	-0.0987	0.7040	0.7339	-0.0298	
LN_VOL_3	0.1454	0.7030	-0.5077	-0.4730	-0.0348	-0.3461	-0.2990	-0.0471	
VOL_6	0.2895	0.5906	1.8668	1.9614	-0.0946	0.6490	0.6778	-0.0288	
LN_VOL_6	0.3196	0.5718	-0.6480	-0.5957	-0.0523	-0.4324	-0.3882	-0.0442	
VOL_12	0.2337	0.6288	1.6545	1.6698	-0.0153	0.6041	0.6191	-0.0151	
LN_VOL_12	0.2601	0.6101	-0.7141	-0.6960	-0.0181	-0.5039	-0.4748	-0.0291	
VOL_18	0.0352	0.8512	1.4984	1.4495	0.0490	0.5798	0.5579	0.0219	
LN_VOL_18	0.0064	0.9360	-0.8090	-0.8129	0.0039	-0.5424	-0.5495	0.0071	
VOL_24	0.0352	0.8512	1.4217	1.3674	0.0544	0.5667	0.5543	0.0124	
LN_VOL_24	0.0178	0.8938	-0.8663	-0.8612	-0.0051	-0.5679	-0.5805	0.0126	
SDEV_VOL	0.0178	0.8846	2.2615	2.2606	0.0009	0.8407	0.8270	0.0137	
LN_SDEV_VOL	0.0449	0.8321	-0.5743	-0.5377	-0.0366	-0.4344	-0.4491	0.0146	
VOLINOSHARES	0.3147	0.5746	0.0015	0.0014	0.0000	0.0004	0.0004	0.0000	
LN_VOLINOSHARES	0.4456	0.5044	-7.9524	-7.9570	0.0046	-7.7350	-7.8118	0.0768	
AGE	0.0021	0.9631	9.9962	9.9705	0.0257	8.5222	8.5542	-0.0319	
MOM_1	0.0648	0.8153	0.0222	0.0188	0.0034	0.0072	0.0042	0.0030	
MOM_3	0.0795	0.7780	0.0650	0.0594	0.0056	0.0388	0.0369	0.0020	
MOM_6	0.7298	0.3930	0.1275	0.1015	0.0260	0.0666	0.0525	0.0141	
MOM_12	0.0841	0.7718	0.2042	0.1878	0.0164	0.1019	0.0938	0.0081	
MOM_18	0.0055	0.9411	0.3113	0.2974	0.0139	0.1573	0.1550	0.0024	
MOM_24	0.0025	0.9603	0.4839	0.4609	0.0231	0.2196	0.2179	0.0017	
NOSHARES	0.0092	0.9235	207847.9194	208328.0800	-680.1606	97558.0000	97558.0000	0.0000	
LN_NOSHARES	0.0000	0.9985	11.8317	11.8337	-0.0020	11.4885	11.4885	0.0000	
MAXP_12	0.0350	0.8517	0.8262	0.8190	0.0062	0.8704	0.8644	0.0060	
MAXP_24	0.0196	0.8886	0.7510	0.7454	0.0056	0.7846	0.7856	-0.0010	
MAXP_60	0.0022	0.9628	0.6152	0.6089	0.0062	0.8223	0.8200	0.0023	
EARN	0.0055	0.9411	158204.1067	159543.0619	-1338.9452	51210.0000	51210.0000	0.0000	
EARNG_3	0.7659	0.3815	0.0080	0.0067	0.0013	0.0000	0.0000	0.0000	
EARNG_6	0.0178	0.8940	0.0179	0.0152	0.0027	0.0000	0.0000	0.0000	
EARNG_12	0.0032	0.9550	0.0347	0.0309	0.0038	0.0181	0.0179	0.0002	
EARNG_24	0.2690	0.6040	0.0563	0.0346	0.0217	0.0333	0.0315	0.0018	
EARNG_60	0.0339	0.8538	0.1209	0.1169	0.0040	0.0705	0.0758	-0.0053	
EPS	0.0134	0.9077	1.3149	1.3167	-0.0018	0.5500	0.5600	-0.0100	
LN_EPS	0.0289	0.8650	-0.4514	-0.4427	-0.0087	-0.3711	-0.3711	0.0000	
ROE	0.3397	0.5600	0.1451	0.1370	0.0081	0.1892	0.1822	0.0070	
PRETAX_PM	0.0006	0.9799	0.0220	0.0174	0.0045	0.0686	0.0686	0.0000	
ACCITA	0.0060	0.9385	-0.0312	-0.0321	0.0009	-0.0266	-0.0266	0.0000	
CH_CF	0.0077	0.9300	0.2256	0.2367	-0.0109	0.1000	0.0930	0.0070	
CH_ARISALES	0.0237	0.8778	-0.3458	-0.3497	0.0038	0.0926	0.0926	0.0000	
CH_ASSTURN	0.0206	0.8859	0.0844	0.0825	0.0019	0.0337	0.0326	0.0011	
CH_CURRENT	0.0895	0.7648	0.0399	0.0359	0.0040	0.0064	0.0064	0.0000	
CH_QUICK	0.0064	0.9272	0.0137	0.0145	-0.0008	-0.0110	-0.0110	0.0000	
CH_INVTURN	0.0237	0.8776	-1.3638	-1.2637	-0.1002	0.3670	0.3670	0.0000	
INVITA	0.0486	0.8255	0.1777	0.1758	0.0019	0.1567	0.1571	0.0015	
CH_INVITA	0.0000	0.9968	0.0030	0.0027	0.0003	0.0028	0.0028	0.0000	
CH_INV	0.0324	0.8572	0.2531	0.2256	0.0274	0.1448	0.1329	0.0119	
CH_SALES	0.1171	0.7322	0.1674	0.1610	0.0064	0.1431	0.1356	0.0075	
CH_DEP	0.0129	0.9095	0.1718	0.1608	0.0108	0.1099	0.1126	-0.0027	
CH_DPS	0.1049	0.7461	0.1520	0.1535	-0.0016	0.1667	0.1667	0.0000	
CH_ROE	0.0030	0.9564	-0.0433	-0.0500	0.0067	0.0004	0.0004	0.0000	
CAPGEAR	0.0005	0.9828	0.2552	0.2557	-0.0005	0.2365	0.2365	0.0000	
CH_CAPGEAR	0.1159	0.7335	0.1407	0.1557	-0.0150	-0.0177	-0.0159	-0.0018	
ROA	0.2466	0.6195	0.0530	0.0507	0.0023	0.0659	0.0634	0.0026	
GM	0.0409	0.8397	0.2351	0.2320	0.0030	0.2150	0.2079	0.0071	
CH_EBTISALES	0.1621	0.6872	0.0760	0.0170	0.0589	-0.0371	-0.0377	0.0006	
SALESICASH	0.0159	0.8996	40.1439	37.0811	3.0629	13.7916	13.7916	0.0000	
LN_SALESICASH	0.0268	0.8652	2.6977	2.6812	0.0165	2.6241	2.6249	-0.0009	
CH_TA	0.1507	0.6979	0.1114	0.1103	0.0011	0.0968	0.0997	-0.0029	
CASHIDEBT	0.0171	0.8961	1.2095	1.1286	0.0809	0.0299	0.0435	-0.0136	
WCITA	0.0483	0.8280	0.5542	0.5510	0.0032	0.5961	0.5881	0.0080	
ORINCITA	0.0686	0.7936	0.0803	0.0783	0.0020	0.0798	0.0790	0.0008	
DIVICF	0.0185	0.8917	-0.6721	-0.5876	-0.0845	0.0000	0.0000	0.0000	
DY	0.0665	0.7965	0.0307	0.0305	0.0002	0.0229	0.0225	0.0003	
CH_INVISALES	0.0210	0.8849	0.0252	0.0218	0.0034	-0.0433	-0.0433	0.0000	
CH_ARISALES	0.0014	0.9705	-0.0482	-0.0543	0.0062	-0.0592	-0.0592	0.0000	
CH_SALESIGM	0.0064	0.9363	0.0024	0.0325	-0.0301	0.0324	0.0324	0.0000	
CH_SAISALES	0.0000	0.9978	-0.0465	-0.0356	-0.0108	-0.0262	-0.0262	0.0000	
LABOUR	0.0481	0.8301	-0.1694	-0.1698	0.0005	-0.1568	-0.1559	-0.0009	
NTC	0.0038	0.9508	79.6571	80.2240	-0.5669	59.2124	59.2124	0.0000	
GFORECAST_12	0.0083	0.9275	2.9321	2.9791	-0.0470	1.2650	1.2800	-0.0150	
REVISION_12	0.0754	0.7837	-0.1248	-0.1158	-0.0092	-0.1107	-0.1006	-0.0101	
REVISION_24	0.0406	0.8402	-0.1040	-0.0969	-0.0071	-0.1085	-0.1066	-0.0020	
REVISION_36	0.0101	0.9200	-0.0813	-0.0788	-0.0025	-0.0541	-0.0516	-0.0025	
RSTRENGTH_ALSI	0.0578	0.8101	0.5140	0.5108	0.0031	0.5034	0.4988	0.0046	
RSTRENGTH_SUB	0.0206	0.8852	0.5047	0.5034	0.0014	0.4970	0.4952	0.0018	
CH_RSTRENGTH_ALSI	0.0092	0.9236	0.0636	0.0612	0.0024	0.0414	0.0450	-0.0036	
CH_RSTRENGTH_SUB	0.0023	0.9620	0.0800	0.0780	0.0020	0.0372	0.0380	-0.0008	
WRSTRENGTH_ALSI	0.0206	0.8858	0.5146	0.5106	0.0041	0.5071	0.5095	-0.0024	
WRSTRENGTH_SUB	0.0571	0.8111	0.5057	0.5040	0.0017	0.4909	0.4933	-0.0023	
POS_SALES	0.0019	0.9650	13.1902	13.4056	-0.2153	9.0000	9.0000	0.0000	
POS_PRETAX	0.0007	0.9784	15.1802	15.3239	-0.1437	11.0000	11.0000	0.0000	
POS_OP	0.0061	0.9378	15.7391	15.8342	-0.0951	12.0000	12.0000	0.0000	
POS_NET	0.0159	0.8998	14.8279	14.9975	-0.1696	12.0000	12.0000	0.0000	
POS_ROE	0.0017	0.9670	15.5633	15.7962	-0.2329	11.0000	11.0000	0.0000	

Appendix C.5. Significant Winner Evolution Signals: 3 Months

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between winner distributions at the start and three months before the start of extreme performance is shown for each variable. The highlighted cells indicate those variables which are significantly different between these shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the two portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger (+), smaller (-) or not significantly different (blank) in winner shares at the start of extreme performance as compared to the same shares three months before the start of extreme performance. If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

Variable	Median Test		Mean			Median			Summary
	Period 0 # Period -3								
	T	Ho: diff != 0	Period 0	Period -3	Difference	Period 0	Period -3	Difference	
INST_OWN	5.1424	0.0233	0.0283	0.0219	0.0064	0.0000	0.0000	0.0000	
MAN_OWN	1.5593	0.2118	0.4699	0.5028	-0.0329	0.4500	0.5500	-0.1000	
PE	0.2401	0.6241	16.1412	15.7076	0.4337	9.4000	9.9000	-0.5000	
EY	0.2131	0.6444	0.1122	0.1065	0.0028	0.0971	0.0962	0.0009	
MV	0.0000	0.9981	3052.7161	3044.9208	7.7953	588.7200	588.7200	0.0000	
LN_MV	0.0088	0.9254	6.5831	6.5532	0.0299	6.4217	6.4330	-0.0113	
BETA	0.0065	0.9355	0.5892	0.5895	-0.0004	0.5840	0.5840	0.0000	
MTB	0.0986	0.7535	1.7092	1.6211	0.0880	1.1700	1.1400	0.0300	
VOL_3	3.4656	0.0619	2.4978	2.8558	-0.3580	0.7040	0.8451	-0.1411	
LN_VOL_3	3.2853	0.0699	-0.5077	-0.3481	-0.1595	-0.3461	-0.1683	-0.1778	
VOL_6	1.6273	0.2021	1.8668	2.0204	-0.1536	0.6490	0.7204	-0.0714	
LN_VOL_6	1.6968	0.1927	-0.6460	-0.5095	-0.1385	-0.4324	-0.3184	-0.1139	
VOL_12	0.5344	0.4647	1.8545	1.8289	0.0256	0.6041	0.6438	-0.0397	
LN_VOL_12	0.8589	0.4189	-0.7141	-0.6603	-0.0538	-0.5039	-0.4321	-0.0717	
VOL_18	0.5344	0.4647	1.4984	1.4420	0.0565	0.5798	0.6076	-0.0278	
LN_VOL_18	0.5731	0.4490	-0.8090	-0.7803	-0.0287	-0.5424	-0.4964	-0.0459	
VOL_24	0.1648	0.6847	1.4217	1.3673	0.0545	0.5667	0.5904	-0.0237	
LN_VOL_24	0.1869	0.6655	-0.8863	-0.8110	-0.0553	-0.5679	-0.5184	-0.0496	
SDEV_VOL	0.2064	0.6496	2.2615	1.9965	0.2650	0.6407	0.6048	0.0359	
LN_SDEV_VOL	0.2073	0.6489	-0.5743	-0.6236	0.0492	-0.4344	-0.4979	0.0635	
VOLINOSHARES	0.0465	0.8294	0.0015	0.0014	0.0000	0.0004	0.0004	0.0000	
LN_VOLINOSHARES	0.0115	0.9147	-7.9524	-7.9189	-0.0335	-7.7350	-7.7163	-0.0187	
AGE	0.0351	0.8515	9.9962	9.8901	0.1061	8.5222	8.4889	0.0333	
MOM_1	0.8409	0.3592	0.0222	0.0143	0.0079	0.0072	0.0000	0.0072	
MOM_3	0.8942	0.3443	0.0650	0.0460	0.0191	0.0388	0.0306	0.0082	
MOM_6	4.1257	0.0422	0.1275	0.0755	0.0520	0.0666	0.0403	0.0263	+
MOM_12	0.2365	0.6268	0.2042	0.1730	0.0312	0.1019	0.0812	0.0207	
MOM_18	0.3805	0.5373	0.3113	0.3091	0.0022	0.1573	0.1810	-0.0236	
MOM_24	0.0225	0.8807	0.4839	0.4431	0.0408	0.2196	0.2250	-0.0054	
NOSHARES	0.0218	0.8828	207647.9194	208990.9802	-1343.0409	97556.0000	97554.0000	4.0000	
LN_NOSHARES	0.0000	0.9963	11.8317	11.8369	-0.0052	11.4685	11.4684	0.0001	
MAXP_12	0.7963	0.3722	0.8252	0.8081	0.0172	0.8704	0.8564	0.0140	
MAXP_24	0.0271	0.8692	0.7510	0.7378	0.0133	0.7846	0.7831	0.0015	
MAXP_60	0.0050	0.9435	0.6152	0.5986	0.0166	0.6223	0.6199	0.0024	
EARN	0.0404	0.8408	158204.1067	162680.0621	-4475.9555	51210.0000	51210.0000	0.0000	
EARNG_3	0.0108	0.9173	0.0080	0.0048	0.0032	0.0000	0.0000	0.0000	
EARNG_6	0.0085	0.9265	0.0179	0.0142	0.0037	0.0000	0.0000	0.0000	
EARNG_12	0.1344	0.7140	0.0347	0.0181	0.0166	0.0181	0.0165	0.0016	
EARNG_24	1.8929	0.1932	0.0563	0.0249	0.0313	0.0333	0.0300	0.0032	
EARNG_60	0.0498	0.8235	0.1209	0.1136	0.0073	0.0705	0.0758	-0.0052	
EPS	0.0263	0.8711	1.3149	1.3107	0.0043	0.5500	0.5650	-0.0150	
LN_EPS	0.1377	0.7105	-0.4514	-0.4334	-0.0180	-0.3711	-0.3425	-0.0286	
ROE	1.3200	0.2506	0.1451	0.1406	0.0045	0.1892	0.1544	0.0148	
PRETAX_PM	0.0000	0.9966	0.0220	0.0145	0.0075	0.0686	0.0686	0.0000	
ACCITA	0.0000	0.9958	-0.0312	-0.0348	0.0036	-0.0266	-0.0266	0.0000	
CH_CF	0.0802	0.7770	0.2258	0.2440	-0.0182	0.1000	0.1000	0.0000	
CH_ARISALES	0.0000	0.9989	-0.3458	-0.2910	-0.0548	0.0926	0.0926	0.0000	
CH_ASSTURN	1.8890	0.1693	0.0644	0.0591	0.0252	0.0337	0.0158	0.0179	
CH_CURRENT	0.8272	0.4284	0.0399	0.0314	0.0085	0.0064	0.0000	0.0064	
CH_QUICK	0.0158	0.9000	0.0137	0.0165	-0.0028	-0.0110	-0.0110	0.0000	
CH_INVTURN	1.7143	0.1904	-1.3638	-1.2948	-0.0691	0.3670	0.1994	0.1676	
INVITA	0.0644	0.7996	0.1777	0.1727	0.0050	0.1587	0.1571	0.0015	
CH_INVITA	0.2971	0.5857	0.0030	0.0009	0.0021	0.0028	0.0021	0.0007	
CH_INV	0.0927	0.7607	0.2531	0.2069	0.0462	0.1448	0.1329	0.0119	
CH_SALES	0.8482	0.3571	0.1674	0.1543	0.0130	0.1431	0.1272	0.0159	
CH_DEP	0.1143	0.7353	0.1716	0.1664	0.0053	0.1099	0.1147	-0.0048	
CH_DPS	1.5949	0.2066	0.1520	0.1395	0.0124	0.1667	0.1481	0.0185	
CH_ROE	0.0973	0.7550	-0.0433	-0.0564	0.0131	0.0004	0.0011	-0.0007	
CAPGEAR	0.0045	0.9466	0.2552	0.2565	-0.0013	0.2365	0.2365	0.0000	
CH_CAPGEAR	0.2643	0.6072	0.1407	0.1508	-0.0101	-0.0177	-0.0154	-0.0023	
ROA	1.3516	0.2450	0.0530	0.0482	0.0048	0.0658	0.0598	0.0061	
GM	0.0002	0.9899	0.2361	0.2319	0.0032	0.2150	0.2150	0.0000	
CH_EBITSALES	0.2462	0.6197	0.0780	-0.1145	0.1905	-0.0371	-0.0383	0.0011	
SALESICASH	0.0135	0.9075	40.1439	33.8704	6.4736	13.7916	13.7916	0.0000	
LN_SALESICASH	0.0628	0.8025	2.6977	2.8349	0.0628	2.6241	2.6249	-0.0009	
CH_TA	1.0484	0.3063	0.1114	0.1264	-0.0150	0.0966	0.1075	-0.0107	
CASHIDEBT	0.0017	0.9672	1.2095	0.9302	0.2793	0.0299	0.0435	-0.0136	
WCITA	0.0627	0.8023	0.5542	0.5497	0.0045	0.5861	0.5881	0.0080	
OPNCITA	0.9384	0.3327	0.0803	0.0753	0.0050	0.0798	0.0785	0.0013	
DIVCF	0.1010	0.7507	-0.6721	-0.2615	-0.4106	0.0000	0.0000	0.0000	
DY	1.0245	0.3115	0.0307	0.0302	0.0005	0.0229	0.0216	0.0013	
CH_INVISALES	1.2624	0.2612	0.0252	0.0440	-0.0188	-0.0433	-0.0276	-0.0156	
CH_ARISALES	0.3281	0.5668	-0.0462	-0.0451	-0.0031	-0.0592	-0.0549	-0.0043	
CH_SALESIGM	0.2736	0.6009	0.0024	0.0169	-0.0145	0.0324	0.0198	0.0126	
CH_SAISALES	0.0734	0.7864	-0.0465	-0.0237	-0.0228	-0.0262	-0.0294	0.0032	
LABOUR	0.9928	0.3191	-0.1694	-0.1593	-0.0100	-0.1566	-0.1552	-0.0016	
NTC	0.1121	0.7377	79.6571	81.1367	-1.4796	69.2124	69.2124	0.0000	
GFORECAST_12	0.0340	0.8536	2.9321	3.0255	-0.0934	1.2650	1.2500	0.0150	
REVISION_12	0.0013	0.9717	-0.1248	-0.1195	-0.0054	-0.1107	-0.1107	0.0000	
REVISION_24	0.0000	0.9999	-0.1040	-0.0877	-0.0163	-0.1085	-0.1085	0.0000	
REVISION_36	0.3176	0.5730	-0.0813	-0.0673	-0.0140	-0.0541	-0.0155	-0.0386	
RSTRENGTH_ALSI	0.8434	0.3584	0.5140	0.5044	0.0095	0.5034	0.4880	0.0153	
RSTRENGTH_SUB	0.1492	0.6993	0.5047	0.4984	0.0063	0.4970	0.4822	0.0148	
CH_RSTRENGTH_ALSI	0.1492	0.6993	0.0836	0.0763	0.0073	0.0414	0.0318	0.0096	
CH_RSTRENGTH_SUB	0.0579	0.8099	0.0800	0.0744	0.0056	0.0372	0.0396	-0.0024	
WRSTRENGTH_ALSI	1.5783	0.2093	0.5146	0.5036	0.0110	0.5071	0.4833	0.0239	
WRSTRENGTH_SUB	0.3379	0.5611	0.5057	0.4976	0.0081	0.4909	0.4790	0.0120	
POS_SALES	0.1425	0.7059	13.1902	13.7589	-0.5688	9.0000	9.0000	0.0000	
POS_PRETAX	0.3475	0.5555	15.1802	15.5241	-0.3439	11.0000	12.0000	-1.0000	
POS_OP	0.0251	0.8741	15.7391	15.9885	-0.2494	12.0000	13.0000	-1.0000	
POS_NET	0.4751	0.4908	14.8279	15.2676	-0.4397	12.0000	13.0000	-1.0000	
POS_ROE	0.0133	0.9081	15.5633	15.9475	-0.3842	11.0000	11.0000	0.0000	

Appendix C.6. Significant Winner Evolution Signals: 6 Months

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between winner distributions at the start and six months before the start of extreme performance is shown for each variable. The highlighted cells indicate those variables which are significantly different between these shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the two portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger (+), smaller (−) or not significantly different (blank) in winner shares at the start of extreme performance as compared to the same shares six months before the start of extreme performance. If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

Variable	Median Test		Mean			Median			Summary
	Period 0 # Period -6								
	T	Ha: diff != 0	Period 0	Period -6	Difference	Period 0	Period -6	Difference	
INST_OWN	4.9826	0.0258	0.0283	0.0182	0.0101	0.0000	0.0000	0.0000	
MAN_OWN	1.4443	0.2295	0.4699	0.5147	-0.0448	0.4500	0.5800	-0.1300	
PE	1.0959	0.2952	16.1412	15.5461	0.5951	9.4000	10.2000	-0.8000	
EY	2.1429	0.1432	0.1122	0.1051	0.0072	0.0971	0.0917	0.0053	
MV	0.0148	0.9031	3052.7161	3119.8280	-67.1119	588.7200	586.8050	1.9150	
LN_MV	0.0005	0.9830	6.5831	6.5502	0.0329	6.4217	6.4217	0.0000	
BETA	0.0786	0.7791	0.5892	0.5904	-0.0013	0.5840	0.5940	-0.0100	
MTB	0.1199	0.7291	1.7092	1.6469	0.0623	1.1700	1.1500	0.0200	
VOL_3	0.5538	0.4568	2.4978	2.4747	0.0231	0.7040	0.7719	-0.0678	
LN_VOL_3	0.4782	0.4902	-0.5077	-0.4427	-0.0650	-0.3481	-0.2590	-0.0872	
VOL_6	0.0265	0.8706	1.8668	1.8167	0.0500	0.6490	0.6705	-0.0215	
LN_VOL_6	0.0265	0.8706	-0.6480	-0.6428	-0.0053	-0.4324	-0.3997	-0.0326	
VOL_12	0.6702	0.4130	1.6545	1.4864	0.1681	0.6041	0.5595	0.0446	
LN_VOL_12	0.5417	0.4617	-0.7141	-0.8032	0.0891	-0.5039	-0.5777	0.0738	
VOL_18	0.0475	0.8275	1.4984	1.2782	0.2202	0.5798	0.5732	0.0067	
LN_VOL_18	0.0068	0.9344	-0.8090	-0.9048	0.0958	-0.5424	-0.5521	0.0098	
VOL_24	0.0119	0.9132	1.4217	1.2976	0.1241	0.5667	0.5718	-0.0052	
LN_VOL_24	0.0598	0.8069	-0.8883	-0.9116	0.0453	-0.5679	-0.5568	-0.0111	
SDEV_VOL	6.2108	0.0127	2.2615	1.8047	0.4568	0.8407	0.4819	0.1588	+
LN_SDEV_VOL	6.7848	0.0092	-0.5743	-0.8690	0.2947	-0.4344	-0.7294	0.2950	+
VOLINOSHARES	0.0599	0.8087	0.0015	0.0015	0.0000	0.0004	0.0004	0.0000	
LN_VOLINOSHARES	0.0909	0.7630	-7.9524	-7.9862	0.0138	-7.7350	-7.7659	0.0309	
AGE	0.2972	0.5856	9.9962	9.8558	0.1404	8.5222	8.3611	0.1611	
MOM_1	1.8016	0.2057	0.0222	0.0038	0.0183	0.0072	0.0000	0.0072	
MOM_3	8.1927	0.0042	0.0650	0.0273	0.0377	0.0388	0.0051	0.0338	+
MOM_6	7.2602	0.0070	0.1275	0.0666	0.0609	0.0666	0.0257	0.0409	+
MOM_12	0.0489	0.8250	0.2042	0.1668	0.0375	0.1019	0.0895	0.0124	
MOM_18	0.1038	0.7473	0.3113	0.3224	-0.0110	0.1573	0.1749	-0.0176	
MOM_24	0.6530	0.4190	0.4839	0.4156	0.0683	0.2196	0.1947	0.0249	
NOSHARES	0.2517	0.6159	207647.9194	206070.8717	1577.0477	97558.0000	97255.0000	303.0000	
LN_NOSHARES	0.3008	0.5835	11.6317	11.6132	0.0185	11.4885	11.4881	0.0004	
MAXP_12	2.4447	0.1179	0.8252	0.7994	0.0258	0.8704	0.8447	0.0256	
MAXP_24	0.0005	0.9818	0.7510	0.7309	0.0201	0.7846	0.7850	-0.0004	
MAXP_60	0.1268	0.7218	0.8152	0.5875	0.0276	0.6223	0.6135	0.0088	
EARN	0.1743	0.6763	158204.1067	169746.9522	-11542.8455	51210.0000	51948.0000	-738.0000	
EARNG_3	0.0851	0.7985	0.0080	0.0071	0.0010	0.0000	0.0000	0.0000	
EARNG_6	0.1800	0.6713	0.0179	0.0190	-0.0011	0.0000	0.0000	0.0000	
EARNG_12	0.8318	0.4287	0.0347	0.0118	0.0229	0.0181	0.0161	0.0020	
EARNG_24	3.3649	0.0666	0.0583	0.0222	0.0341	0.0333	0.0251	0.0082	
EARNG_60	0.0057	0.9396	0.1209	0.1137	0.0072	0.0705	0.0719	-0.0014	
EPS	0.0370	0.8474	1.3149	1.2787	0.0362	0.5500	0.5200	0.0300	
LN_EPS	0.8301	0.4273	-0.4514	-0.4136	-0.0378	-0.3711	-0.3147	-0.0564	
ROE	1.8357	0.1755	0.1451	0.1498	-0.0048	0.1692	0.1516	0.0176	
PRETAX_PM	0.0497	0.8235	0.0220	0.0090	0.0129	0.0686	0.0651	0.0035	
ACCITA	0.0003	0.9854	-0.0312	-0.0358	0.0044	-0.0266	-0.0266	0.0000	
CH_CF	0.4175	0.5182	0.2268	0.2691	-0.0434	0.1000	0.1111	-0.0111	
CH_ARISALES	0.0044	0.9470	-0.3458	-0.2773	-0.0686	0.0926	0.0926	0.0000	
CH_ASSTURN	7.5380	0.0060	0.0844	0.0435	0.0409	0.0337	0.0010	0.0327	+
CH_CURRENT	1.6467	0.1994	0.0399	0.0342	0.0057	0.0064	-0.0105	0.0169	
CH_QUICK	0.1083	0.7421	0.0137	0.0338	-0.0200	-0.0110	-0.0088	-0.0021	
CH_INVTURN	5.3342	0.0209	-1.3638	0.6276	-1.9914	0.3670	0.0905	0.2765	+
CH_WCITA	0.1206	0.7284	0.1777	0.1688	0.0090	0.1587	0.1557	0.0029	
CH_INVITA	2.5573	0.1098	0.0030	-0.0011	0.0041	0.0028	0.0010	0.0018	
CH_INV	0.2513	0.6162	0.2531	0.1631	0.0900	0.1448	0.1273	0.0175	
CH_SALES	3.4029	0.0651	0.1874	0.1627	0.0247	0.1431	0.1247	0.0185	
CH_DEP	1.5251	0.2188	0.1718	0.2020	-0.0304	0.1099	0.1258	-0.0159	
CH_DPS	3.5958	0.0579	0.1520	0.0955	0.0564	0.1667	0.1429	0.0238	
CH_ROE	0.5822	0.4534	-0.0433	-0.0402	-0.0031	0.0004	0.0011	-0.0007	
CAPGEAR	0.0740	0.7855	0.2552	0.2566	-0.0014	0.2365	0.2349	0.0016	
CH_CAPGEAR	1.9803	0.1594	0.1407	0.1865	-0.0458	-0.0177	-0.0114	-0.0063	
ROA	2.9878	0.0839	0.0530	0.0461	0.0069	0.0659	0.0554	0.0106	
GM	0.0272	0.8690	0.2361	0.2293	0.0068	0.2150	0.2061	0.0089	
CH_EBITSALES	0.1315	0.7169	0.0760	-0.2488	0.3245	-0.0371	-0.0383	0.0011	
SALESICASH	0.0317	0.8588	40.1439	33.1497	6.9942	13.7916	13.7916	0.0000	
LN_SALESICASH	0.0213	0.8839	2.6977	2.6022	0.0955	2.6241	2.6241	0.0000	
CH_TA	4.8727	0.0308	0.1114	0.1575	-0.0461	0.0968	0.1232	-0.0265	-
CASHtDEBT	0.0214	0.8837	1.2095	0.8712	0.3383	0.0299	0.0435	-0.0136	
WCITA	0.0798	0.7775	0.5542	0.5471	0.0071	0.5961	0.5881	0.0080	
OPINCITA	2.8441	0.0917	0.0803	0.0716	0.0086	0.0798	0.0768	0.0030	
DIVICF	0.0764	0.7823	-0.6721	0.2963	-0.9684	0.0000	0.0000	0.0000	
DY	2.0908	0.1482	0.0307	0.0292	0.0015	0.0229	0.0212	0.0016	
CH_INVSALES	2.8965	0.0888	0.0252	0.0061	0.0191	-0.0433	-0.0190	-0.0243	
CH_ARISALES	1.2185	0.2697	-0.0482	-0.1003	0.0522	-0.0592	-0.0500	-0.0092	
CH_SALESIGM	1.8078	0.1788	0.0024	0.0020	0.0004	0.0324	0.0198	0.0126	
CH_SAISALES	0.4508	0.5020	-0.0465	-0.0208	-0.0257	-0.0262	-0.0294	0.0032	
LABOUR	1.6480	0.1992	-0.1694	-0.1555	-0.0139	-0.1568	-0.1421	-0.0147	
NTC	0.3892	0.5327	79.6571	81.9872	-2.3302	69.2124	64.7355	4.4769	
GFORECAST_12	0.0085	0.9264	2.9321	3.0020	-0.0698	1.2650	1.2500	0.0150	
REVISION_12	0.0293	0.8642	-0.1248	-0.1220	-0.0029	-0.1107	-0.1116	0.0009	
REVISION_24	0.0046	0.9458	-0.1040	-0.0809	-0.0231	-0.1085	-0.1083	-0.0002	
REVISION_36	0.6744	0.4115	-0.0813	-0.0188	-0.0625	-0.0541	-0.0082	-0.0459	
RSTRENGTH_ALSI	0.9085	0.3410	0.5140	0.5008	0.0131	0.5034	0.4859	0.0175	
RSTRENGTH_SUB	0.5469	0.4212	0.5047	0.4964	0.0084	0.4970	0.4743	0.0227	
CH_RSTRENGTH_ALSI	0.2623	0.8086	0.0836	0.0745	0.0091	0.0414	0.0326	0.0088	
CH_RSTRENGTH_SUB	0.0731	0.7869	0.0800	0.0730	0.0070	0.0372	0.0337	0.0034	
WRSTRENGTH_ALSI	0.8635	0.4153	0.5148	0.5011	0.0135	0.5071	0.4859	0.0212	
WRSTRENGTH_SUB	0.5735	0.4489	0.5057	0.4970	0.0087	0.4909	0.4696	0.0213	
POS_SALES	0.0244	0.8759	13.1902	13.8661	-0.6759	9.0000	9.0000	0.0000	
POS_PRETAX	0.6121	0.4340	15.1802	15.7054	-0.5252	11.0000	12.0000	-1.0000	
POS_OP	0.6588	0.4170	15.7391	16.0700	-0.3309	12.0000	13.0000	-1.0000	
POS_NET	1.1910	0.2751	14.8279	15.5631	-0.7352	12.0000	13.0000	-1.0000	
POS_ROE	0.2699	0.6034	15.5633	16.1263	-0.5630	11.0000	11.0000	0.0000	

Appendix C.7. Significant Winner Evolution Signals: 9 Months

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between winner distributions at the start and nine months before the start of extreme performance is shown for each variable. The highlighted cells indicate those variables which are significantly different between these shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the two portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger (+), smaller (−) or not significantly different (blank) in winner shares at the start of extreme performance as compared to the same shares nine months before the start of extreme performance. If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

Variable	Median Test		Mean			Median			Summary
	Period 0 # Period -9								
	T	Ha: diff != 0	Period 0	Period -9	Difference	Period 0	Period -9	Difference	
INST_OWN	5.3361	0.0209	0.0283	0.0199	0.0084	0.0000	0.0000	0.0000	
MAN_OWN	1.6288	0.2019	0.4899	0.5249	-0.0550	0.4500	0.6000	-0.1500	
PE	1.7408	0.1871	16.1412	15.4221	0.7192	9.4000	10.3500	-0.9500	
EY	5.2763	0.0216	0.1122	0.0964	0.0159	0.0971	0.0877	0.0094	+
MV	0.2061	0.6498	3052.7161	3184.0149	-131.2988	588.7200	615.0800	-26.3400	
LN_MV	0.1573	0.6917	6.5831	6.5753	0.0078	6.4217	6.4494	-0.0278	
BETA	0.0444	0.8332	0.5892	0.5900	-0.0009	0.5840	0.5890	-0.0050	
MTB	0.2904	0.5900	1.7092	1.6530	0.0562	1.1700	1.1900	-0.0200	
VOL_3	3.4278	0.0641	2.4978	2.7896	-0.2918	0.7040	0.8483	-0.1423	
LN_VOL_3	3.3224	0.0683	-0.5077	-0.3610	-0.1467	-0.3461	-0.1662	-0.1799	
VOL_6	0.4065	0.5237	1.8668	1.8874	-0.0207	0.6490	0.6834	-0.0314	
LN_VOL_6	0.4444	0.5050	-0.6480	-0.6032	-0.0448	-0.4324	-0.3798	-0.0526	
VOL_12	1.0539	0.3046	1.6545	1.4939	0.1606	0.6041	0.5489	0.0551	
LN_VOL_12	0.9434	0.3314	-0.7141	-0.8283	0.1143	-0.5039	-0.5847	0.0808	
VOL_18	0.0492	0.8245	1.4984	1.3493	0.1491	0.5798	0.5530	0.0268	
LN_VOL_18	0.0072	0.9325	-0.8090	-0.8897	0.0807	-0.5424	-0.5726	0.0302	
VOL_24	0.2458	0.6201	1.4217	1.3219	0.0998	0.5667	0.5818	-0.0150	
LN_VOL_24	0.2204	0.6388	-0.8663	-0.8996	0.0333	-0.5679	-0.5389	-0.0290	
SDEV_VOL	8.0476	0.0046	2.2815	1.5626	0.6989	0.8407	0.4357	0.2050	+
LN_SDEV_VOL	8.2416	0.0041	-0.5743	-0.9132	0.3388	-0.4344	-0.8169	0.3825	+
VOLINOSHARES	0.0909	0.7630	0.0015	0.0015	0.0000	0.0004	0.0004	0.0000	
LN_VOLINOSHARES	0.0188	0.8916	-7.9524	-7.9364	-0.0160	-7.7350	-7.7098	-0.0252	
AGE	0.6206	0.4308	9.9962	9.8647	0.1315	8.5222	8.3361	0.1861	
MOM_1	0.3629	0.5469	0.0222	0.0064	0.0158	0.0072	0.0000	0.0072	
MOM_3	6.4025	0.0114	0.0650	0.0324	0.0327	0.0388	0.0073	0.0315	+
MOM_6	1.3593	0.2437	0.1275	0.0793	0.0482	0.0666	0.0469	0.0197	
MOM_12	0.1362	0.7121	0.2042	0.1841	0.0201	0.1019	0.1135	-0.0116	
MOM_18	0.0025	0.9600	0.3113	0.3469	-0.0355	0.1573	0.1590	-0.0016	
MOM_24	2.1694	0.1408	0.4839	0.4306	0.0533	0.2196	0.1478	0.0719	
NOSHARES	0.2090	0.6476	207647.9194	207219.8517	428.0677	97558.0000	97520.0000	38.0000	
LN_NOSHARES	0.1852	0.6844	11.6317	11.6156	0.0162	11.4885	11.4881	0.0004	
MAXP_12	1.0085	0.3153	0.8252	0.8075	0.0177	0.8704	0.8532	0.0171	
MAXP_24	0.0698	0.7917	0.7510	0.7318	0.0193	0.7846	0.7788	0.0058	
MAXP_60	0.8713	0.3506	0.6152	0.5885	0.0266	0.6223	0.5941	0.0282	
EARN	0.1319	0.7165	158204.1087	175074.1828	-16870.0762	51210.0000	55237.5000	-4027.5000	
EARNG_3	0.1869	0.6655	0.0060	0.0062	-0.0002	0.0000	0.0000	0.0000	
EARNG_6	0.1003	0.7515	0.0179	0.0108	0.0071	0.0000	0.0000	0.0000	
EARNG_12	0.5151	0.4730	0.0347	-0.0033	0.0380	0.0181	0.0161	0.0020	
EARNG_24	10.0190	0.0015	0.0563	0.0087	0.0476	0.0333	0.0184	0.0149	+
EARNG_60	1.2716	0.2595	0.1209	0.1349	-0.0140	0.0705	0.0828	-0.0122	
EPS	0.0381	0.8452	1.3149	1.2658	0.0492	0.5500	0.5200	0.0300	
LN_EPS	0.9539	0.3287	-0.4514	-0.3875	-0.0639	-0.3711	-0.2877	-0.0834	
ROE	3.9278	0.0478	0.1451	0.1549	-0.0098	0.1692	0.1448	0.0244	+
PRETAX_PM	0.8506	0.3564	0.0220	0.0049	0.0170	0.0686	0.0634	0.0052	
ACCRTA	0.0187	0.8973	-0.0312	-0.0339	0.0028	-0.0266	-0.0261	-0.0005	
CH_CF	2.1360	0.1439	0.2258	0.2654	-0.0396	0.1000	0.1111	-0.0111	
CH_ARTSALES	0.0537	0.8167	-0.3458	-0.1397	-0.2061	0.0926	0.0864	0.0062	
CH_ASSTURN	10.5078	0.0012	0.0644	0.0314	0.0330	0.0337	0.0000	0.0337	+
CH_CURRENT	1.8328	0.1758	0.0399	0.0393	0.0006	0.0064	-0.0144	0.0206	
CH_QUICK	1.5128	0.2187	0.0137	0.0606	-0.0469	-0.0110	0.0000	-0.0110	
CH_INVTURN	8.3149	0.0039	-1.3638	1.4118	-2.7756	0.3670	0.0000	0.3670	+
INVITA	0.0432	0.8353	0.1777	0.1670	0.0107	0.1587	0.1557	0.0029	
CH_INVITA	3.5886	0.0582	0.0030	-0.0010	0.0040	0.0028	0.0010	0.0018	
CH_INV	1.1388	0.2859	0.2531	0.1509	0.1022	0.1448	0.1273	0.0175	
CH_SALES	6.2060	0.0127	0.1674	0.1783	-0.0089	0.1431	0.1074	0.0358	+
CH_DEP	3.5008	0.0613	0.1716	0.2430	-0.0714	0.1099	0.1341	-0.0242	
CH_DPS	5.8938	0.0152	0.1520	0.0491	0.1028	0.1667	0.1071	0.0595	+
CH_ROE	1.3580	0.2439	-0.0433	-0.0644	0.0211	0.0004	0.0028	-0.0024	
CAPGEAR	0.9155	0.3387	0.2562	0.2599	-0.0047	0.2366	0.2333	0.0032	
CH_CAPGEAR	2.5449	0.1107	0.1407	0.2356	-0.0950	-0.0177	-0.0110	-0.0067	
ROA	3.7022	0.0543	0.0530	0.0449	0.0081	0.0659	0.0554	0.0106	
GM	1.3965	0.2373	0.2351	0.2219	0.0131	0.2150	0.1927	0.0223	
CH_EBTISALES	1.6448	0.1997	0.0780	-0.3316	0.4076	-0.0371	-0.0636	0.0465	
SALESICASH	0.5925	0.4416	40.1439	31.1934	8.9506	13.7916	13.2161	0.5755	
LN_SALESICASH	0.3595	0.5488	2.8977	2.5781	0.1195	2.6241	2.8077	0.0164	
CH_TA	7.4700	0.0063	0.1114	0.1820	-0.0706	0.0968	0.1317	-0.0349	-
CASHIDEBT	1.4919	0.2219	1.2095	0.6530	0.5565	0.0299	0.0638	-0.0339	
WCITA	0.2202	0.6389	0.5542	0.5471	0.0071	0.5961	0.5929	0.0031	
OPINCITA	3.7983	0.0513	0.0803	0.0706	0.0097	0.0798	0.0702	0.0096	
DIVICF	0.1697	0.6804	-0.8721	0.1629	-0.8350	0.0000	0.0000	0.0000	
DY	8.8187	0.0030	0.0307	0.0278	0.0029	0.0229	0.0194	0.0035	+
CH_INVISALES	3.8502	0.0497	0.0252	-0.0183	0.0436	-0.0433	-0.0087	-0.0345	-
CH_ARISALES	1.5206	0.2175	-0.0482	-0.1478	0.0994	-0.0592	-0.0500	-0.0092	
CH_SALESIGM	1.4448	0.2294	0.0024	0.0033	-0.0009	0.0324	0.0196	0.0128	
CH_SAISALES	0.4934	0.4824	-0.0465	0.0188	-0.0654	-0.0262	-0.0436	0.0173	
LABOUR	1.9390	0.1638	-0.1694	-0.1472	-0.0222	-0.1568	-0.1287	-0.0281	
NTC	0.3942	0.5301	79.8571	83.0487	-3.3916	69.2124	64.3367	4.8757	
IGFORECAST_12	0.2149	0.6430	2.9321	3.0346	-0.1024	1.2650	1.3000	-0.0350	
REVISION_12	0.8197	0.3653	-0.1248	-0.1110	-0.0138	-0.1107	-0.0909	-0.0198	
REVISION_24	0.2287	0.6325	-0.1040	-0.0783	-0.0257	-0.1085	-0.1029	-0.0057	
REVISION_36	0.6821	0.4089	-0.0813	-0.0153	-0.0660	-0.0541	-0.0121	-0.0419	
RSTRENGTH_ALSI	0.6595	0.4167	0.5140	0.4963	0.0176	0.5034	0.4858	0.0175	
RSTRENGTH_SUB	1.2368	0.2661	0.5047	0.4899	0.0148	0.4970	0.4586	0.0385	
CH_RSTRENGTH_ALSI	0.2678	0.6050	0.0836	0.0715	0.0121	0.0414	0.0285	0.0129	
CH_RSTRENGTH_SUB	0.0752	0.7840	0.0800	0.0638	0.0162	0.0372	0.0327	0.0045	
WRSTRENGTH_ALSI	1.2253	0.2683	0.5146	0.4974	0.0173	0.5071	0.4831	0.0240	
WRSTRENGTH_SUB	1.0174	0.3131	0.5057	0.4931	0.0127	0.4908	0.4686	0.0224	
POS_SALES	0.6376	0.4246	13.1902	13.8302	-0.6400	9.0000	9.5000	-0.5000	
POS_PRETAX	2.3718	0.1235	15.1802	16.1756	-0.9953	11.0000	13.0000	-2.0000	
POS_OP	2.3714	0.1236	15.7391	16.3468	-0.6077	12.0000	13.0000	-1.0000	
POS_NET	3.6183	0.0571	14.8279	16.0289	-1.2009	12.0000	13.0000	-1.0000	
POS_ROE	1.0706	0.3008	15.5633	16.2637	-0.7004	11.0000	12.0000	-1.0000	

Appendix C.8. Significant Winner Evolution Signals: 12 Months

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between winner distributions at the start and twelve months before the start of extreme performance is shown for each variable. The highlighted cells indicate those variables which are significantly different between these shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the two portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger (+), smaller (-) or not significantly different (blank) in winner shares at the start of extreme performance as compared to the same shares twelve months before the start of extreme performance. If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

Variable	Median Test		Mean			Median			Summary
	Period 0 = Period -12								
	T	Ho: diff != 0	Period 0	Period -12	Difference	Period 0	Period -12	Difference	
INST_OWN	4.6004	0.0320	0.0283	0.0176	0.0107	0.0000	0.0000	0.0000	
MAN_OWN	2.1173	0.1456	0.4699	0.5504	-0.0805	0.4500	0.6500	-0.2000	
PE	4.4861	0.0342	16.1412	15.5715	0.5697	9.4000	10.7000	-1.3000	-
EY	12.4724	0.0004	0.1122	0.0840	0.0282	0.0971	0.0840	0.0131	+
MV	0.5313	0.4661	3052.7161	3329.8623	-277.1462	588.7200	626.2500	-37.5300	
LN_MV	0.3325	0.5642	6.5831	6.5918	-0.0087	6.4217	6.4594	-0.0377	
BETA	0.0260	0.8718	0.5892	0.5900	-0.0009	0.5840	0.5840	0.0000	
MTB	2.8981	0.0887	1.7092	1.6975	0.0117	1.1700	1.2300	-0.0630	
VOL_3	0.0141	0.9055	2.4978	2.6216	-0.1237	0.7040	0.8773	0.0267	
LN_VOL_3	0.0033	0.9545	-0.5077	-0.4745	-0.0332	-0.3461	-0.3614	0.0152	
VOL_6	1.3493	0.2454	1.8668	1.8838	0.1830	0.8490	0.5524	0.0966	
LN_VOL_6	1.0993	0.2944	-0.6480	-0.7274	0.0794	-0.4324	-0.5870	0.1546	
VOL_12	3.3576	0.0669	1.6545	1.3823	0.2722	0.8041	0.4826	0.1215	
LN_VOL_12	3.4503	0.0632	-0.7141	-0.9133	0.1992	-0.5039	-0.7138	0.2099	
VOL_18	2.1412	0.1434	1.4984	1.2753	0.2231	0.5798	0.4640	0.1159	
LN_VOL_18	1.9802	0.1594	-0.8090	-0.9666	0.1576	-0.5424	-0.7638	0.2215	
VOL_24	1.0263	0.3110	1.4217	1.2446	0.1771	0.5667	0.4953	0.0713	
LN_VOL_24	0.9157	0.3386	-0.8683	-0.9780	0.1116	-0.5679	-0.7014	0.1335	
SDEV_VC_	6.8259	0.0101	2.2615	1.5456	0.7159	0.8407	0.4501	0.1906	+
LN_SDEV_VOL	7.8722	0.0066	-0.5743	-0.8843	0.3099	-0.4344	-0.7963	0.3619	+
VC_:NOSHARES	0.0037	0.9513	0.0015	0.0013	0.0002	0.0004	0.0004	0.0000	
LN_VOLNOSHARES	0.0031	0.9553	-7.9524	-7.9476	-0.0048	-7.7350	-7.7339	-0.0011	
AGE	1.9509	0.1625	9.9962	9.8193	0.1769	8.5222	8.1750	0.3472	
MOM_1	0.3620	0.5474	0.0222	0.0110	0.0112	0.0072	0.0094	-0.0022	
MOM_3	1.1387	0.2859	0.0650	0.0400	0.0251	0.0388	0.0260	0.0128	
MOM_6	3.8370	0.0501	0.1275	0.0703	0.0572	0.0666	0.0363	0.0303	
MOM_12	0.0396	0.8422	0.2042	0.1810	0.0232	0.1019	0.1075	-0.0056	
MOM_18	0.1887	0.6640	0.3113	0.3094	0.0019	0.1573	0.1359	0.0214	
MOM_24	2.3610	0.1244	0.4839	0.4075	0.0765	0.2198	0.1418	0.0781	
NOSHARES	0.3184	0.5726	207647.9194	208496.6051	-848.6857	97558.0000	97255.0000	303.0000	
LN_NOSHARES	0.8395	0.3596	11.6317	11.6174	0.0144	11.4885	11.4860	0.0025	
MAXP_12	2.6136	0.1060	0.8262	0.8042	0.0210	0.8704	0.8366	0.0338	
MAXP_24	0.7145	0.3979	0.7510	0.7263	0.0248	0.7846	0.7714	0.0132	
MAXP_60	1.2872	0.2586	0.6152	0.5823	0.0329	0.6223	0.5960	0.0263	
EARN	0.0013	0.9708	158204.1067	172276.9741	-14072.8675	51210.0000	49291.0000	1919.0000	
EARNG_3	1.0036	0.3164	0.0080	0.0027	0.0054	0.0000	0.0000	0.0000	
EARNG_6	2.4995	0.1139	0.0179	0.0029	0.0150	0.0000	0.0000	0.0000	
EARNG_12	2.8053	0.1065	0.0347	-0.0071	0.0418	0.0181	0.0135	0.0046	
EARNG_24	13.6235	0.0002	0.0563	0.0127	0.0436	0.0333	0.0132	0.0201	+
EARNG_60	2.1715	0.1406	0.1209	0.1335	-0.0126	0.0705	0.0882	-0.0177	
EPS	0.9831	0.3214	1.3149	1.2264	0.0886	0.5500	0.4950	0.0550	
LN_EPS	0.7071	0.4004	-0.4514	-0.4045	-0.0469	-0.3711	-0.3147	-0.0564	
ROE	10.0058	0.0016	0.1451	0.1738	-0.0287	0.1692	0.1361	0.0331	+
PRETAX_PM	2.2587	0.1329	0.0220	0.0092	0.0128	0.0886	0.0633	0.0053	
ACCITA	0.0120	0.9128	-0.0312	-0.0368	0.0056	-0.0266	-0.0266	0.0000	
CH_CF	0.8057	0.4364	0.2268	0.2344	-0.0086	0.1000	0.1111	-0.0111	
CH_ARISALES	0.0014	0.9704	-0.3458	-0.0084	-0.3394	0.0926	0.0884	0.0062	
CH_ASSTURN	11.0458	0.0009	0.0844	0.0338	0.0506	0.0337	-0.0009	0.0346	+
CH_CURRENT	0.7876	0.3748	0.0399	0.0474	-0.0075	0.0084	0.0000	0.0084	
CH_QUICK	6.1239	0.0133	0.0137	0.0869	-0.0732	-0.0110	0.0000	-0.0110	-
CH_INVTURN	8.3825	0.0038	-1.3638	1.1826	-2.5464	0.3870	0.0905	0.2765	+
INVITA	0.0463	0.8296	0.1777	0.1618	0.0159	0.1587	0.1557	0.0029	
CH_INVITA	4.9782	0.0287	0.0030	-0.0016	0.0046	0.0028	0.0000	0.0028	+
CH_INV	1.3997	0.2368	0.2531	0.1510	0.1021	0.1448	0.1197	0.0251	
CH_SALES	8.2883	0.0040	0.1674	0.1958	-0.0284	0.1431	0.1074	0.0358	+
CH_DEP	5.7905	0.0161	0.1716	0.3164	-0.1448	0.1099	0.1428	-0.0329	-
CH_DPS	10.8786	0.0010	0.1620	0.0371	0.1149	0.1667	0.0931	0.0736	+
CH_ROE	0.3610	0.5535	-0.0433	-0.0366	-0.0067	0.0004	0.0011	-0.0007	
CAPGEAR	0.0601	0.8063	0.2552	0.2639	-0.0087	0.2365	0.2361	0.0004	
CH_CAPGEAR	2.0119	0.1561	0.1407	0.2586	-0.1179	-0.0177	0.0000	-0.0177	
ROA	5.8031	0.0160	0.0530	0.0414	0.0116	0.0659	0.0476	0.0183	+
GM	5.5327	0.0187	0.2351	0.2167	0.0183	0.2150	0.1853	0.0297	+
CH_EBTtiSALES	7.8563	0.0051	0.0780	-0.4056	0.4836	-0.0371	-0.1090	0.0719	+
SALESICASH	1.3178	0.2510	40.1439	30.7695	9.3745	13.7916	12.3533	1.4383	
LN_SALESICASH	0.5579	0.4551	2.8977	2.5679	0.1298	2.6241	2.5814	0.0426	
CH_TA	8.0430	0.0046	0.1114	0.1995	-0.0881	0.0968	0.1241	-0.0273	-
CASHIDEBT	3.4881	0.0618	1.2095	0.2579	0.9516	0.0299	0.0755	-0.0456	
WCITA	0.3697	0.5432	0.5542	0.5397	0.0145	0.5961	0.5750	0.0211	
OPINCITA	8.0557	0.0046	0.0803	0.0677	0.0126	0.0798	0.0640	0.0158	+
DIVICF	1.8764	0.1954	-0.6721	0.6910	-1.3631	0.0000	0.0000	0.0000	
DY	7.9989	0.0047	0.0307	0.0273	0.0034	0.0229	0.0198	0.0031	+
CH_INVISALES	3.1080	0.0779	0.0252	-0.0276	0.0528	-0.0433	-0.0190	-0.0243	
CH_ARISALES	2.5520	0.1102	-0.0482	-0.1713	0.1231	-0.0592	-0.0500	-0.0092	
CH_SALESIGM	0.1930	0.6604	0.0024	0.0508	-0.0481	0.0324	0.0198	0.0126	
CH_SAISALES	0.0186	0.8914	-0.0465	0.0440	-0.0905	-0.0262	0.0530	-0.0792	
LABOUR	1.8920	0.1933	-0.1694	-0.1570	-0.0124	-0.1568	-0.1552	-0.0016	
NTC	0.0232	0.8789	79.8571	85.2797	-5.6226	89.2124	89.2124	0.0000	
GFORECAST_12	0.0750	0.7841	2.9321	3.0026	-0.0705	1.2650	1.2900	-0.0250	
REVISION_12	2.7588	0.0949	-0.1248	-0.1092	-0.0156	-0.1107	-0.0780	-0.0327	
REVISION_24	2.5471	0.1105	-0.1040	-0.0780	-0.0260	-0.1065	-0.0640	-0.0445	
REVISION_36	0.2268	0.6339	-0.0813	-0.0485	-0.0329	-0.0541	-0.0712	0.0171	
RSTRENGTH_ALSI	0.3537	0.5520	0.5140	0.4920	0.0220	0.5034	0.4858	0.0186	
RSTRENGTH_SUB	1.3228	0.2501	0.5047	0.4854	0.0194	0.4970	0.4583	0.0387	
CH_RSTRENGTH_ALSI	0.0884	0.7662	0.0836	0.0827	0.0209	0.0414	0.0348	0.0068	
CH_RSTRENGTH_SUB	0.2457	0.6202	0.0600	0.0517	0.0282	0.0372	0.0302	0.0069	
WRSTRENGTH_ALSI	0.7959	0.3723	0.5146	0.4958	0.0189	0.5071	0.4851	0.0220	
WRSTRENGTH_SUB	0.9826	0.3216	0.5057	0.4920	0.0137	0.4909	0.4691	0.0219	
POS_SALES	0.3748	0.5404	13.1902	13.7140	-0.5238	9.0000	9.0000	0.0000	
POS_PRETAX	4.4636	0.0348	16.1802	16.7836	-1.6034	11.0000	13.0000	-2.0000	-
POS_OP	7.2326	0.0072	15.7391	16.7405	-1.0014	12.0000	14.0000	-2.0000	-
POS_NET	9.1318	0.0025	14.8279	16.6618	-1.8338	12.0000	14.0000	-2.0000	-
POS_ROE	3.3985	0.0653	15.5833	16.6547	-1.0914	11.0000	13.0000	-2.0000	

Appendix C.9. Significant Loser Evolution Signals: 1 Month

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between loser distributions at the start and one month before the start of extreme performance is shown for each variable. The highlighted cells indicate those variables which are significantly different between these shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the two portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger (+), smaller (-) or not significantly different (blank) in loser shares at the start of extreme performance as compared to the same shares one month before the start of extreme performance. If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

Variable	Median Test		Mean			Median			Summary
	Period 0 # Period -1								
	T	Ha: diff != 0	Period 0	Period -1	Difference	Period 0	Period -1	Difference	
INST_OWN	0.7888	0.3745	0.0078	0.0059	0.0018	0.0000	0.0000	0.0000	
MAN_OWN	0.0378	0.8459	0.5189	0.5304	-0.0115	0.5700	0.6200	-0.0500	
PE	0.1129	0.7369	16.1412	16.2206	-0.0794	11.8300	11.5000	0.3000	
EY	0.0998	0.7521	0.0990	0.1016	-0.0026	0.0794	0.0806	-0.0013	
MV	0.0129	0.9095	3477.8727	3454.0964	23.5764	838.8700	842.3050	-3.6350	
LN_MV	0.0032	0.9547	6.6344	6.6407	-0.0063	6.4594	6.4698	-0.0104	
BETA	0.0028	0.9578	0.5588	0.5584	0.0004	0.5320	0.5320	0.0000	
MTB	0.1144	0.7352	2.6484	2.6123	0.0361	1.7300	1.8900	0.0400	
VOL_3	0.3872	0.5445	2.6830	2.4657	0.2173	0.6900	0.7424	-0.0524	
LN_VOL_3	0.4489	0.5038	-0.4056	-0.3452	-0.0603	-0.3708	-0.2891	-0.0817	
VOL_6	1.2960	0.2549	1.9830	1.9338	0.0491	0.5414	0.6036	-0.0621	
LN_VOL_6	1.3647	0.2427	-0.6442	-0.5722	-0.0720	-0.6129	-0.4916	-0.1213	
VOL_12	0.8376	0.3601	1.7240	1.6831	0.0409	0.5056	0.5668	-0.0613	
LN_VOL_12	0.9560	0.3282	-0.7421	-0.6311	-0.1109	-0.6822	-0.5643	-0.1179	
VOL_18	0.3597	0.5487	1.6594	1.6448	0.0146	0.5574	0.5750	-0.0176	
LN_VOL_18	0.4384	0.5079	-0.7120	-0.6142	-0.0978	-0.5844	-0.5377	-0.0468	
VOL_24	0.3597	0.5487	1.6075	1.6078	-0.0003	0.5722	0.6023	-0.0301	
LN_VOL_24	0.3591	0.5490	-0.7050	-0.6165	-0.0885	-0.5583	-0.4934	-0.0649	
SDEV_VOL	0.0154	0.9012	2.1109	2.0915	0.0194	0.4990	0.5055	-0.0065	
LN_SDEV_VOL	0.0010	0.9754	-0.6218	-0.6263	0.0045	-0.6928	-0.6823	-0.0105	
VOLINOSHARES	0.3186	0.5724	0.0016	0.0015	0.0001	0.0004	0.0004	0.0000	
LN_VOLINOSHARES	0.3549	0.5514	-7.8811	-7.8213	-0.0599	-7.7491	-7.7055	-0.0436	
AGE	0.0128	0.9099	8.7273	8.7543	-0.0271	7.4778	7.4944	-0.0167	
MOM_1	0.1592	0.6899	0.0052	0.0097	-0.0046	0.0000	0.0036	-0.0036	
MOM_3	0.0408	0.8400	0.0304	0.0332	-0.0029	0.0272	0.0294	-0.0023	
MOM_6	0.0212	0.8841	0.0692	0.0643	0.0050	0.0246	0.0214	0.0032	
MOM_12	0.0009	0.9766	0.1045	0.1052	-0.0007	0.0087	0.0090	-0.0003	
MOM_18	0.1518	0.6969	0.1612	0.1506	0.0106	-0.0073	-0.0189	0.0117	
MOM_24	0.0010	0.9746	0.2879	0.2973	-0.0094	0.0362	0.0360	0.0002	
NOSHARES	0.0130	0.9092	187946.4792	186674.7403	1271.7389	117234.0000	114601.0000	2633.0000	
LN_NOSHARES	0.0130	0.9092	11.8389	11.8369	0.0020	11.6719	11.6492	0.0227	
MAXP_12	0.0131	0.9090	0.7731	0.7732	-0.0001	0.8000	0.7988	0.0012	
MAXP_24	0.1596	0.6895	0.6745	0.6708	0.0037	0.7217	0.7179	0.0038	
MAXP_60	0.0000	0.9996	0.8015	0.8009	0.0006	0.8552	0.8552	0.0000	
EARN	0.0249	0.8746	177121.3374	173751.5179	3369.8195	55756.0000	49404.0000	6352.0000	
EARNG_3	0.0452	0.8316	0.0032	0.0038	-0.0006	0.0000	0.0000	0.0000	
EARNG_6	0.0014	0.9704	0.0080	0.0111	-0.0032	0.0000	0.0000	0.0000	
EARNG_12	0.0103	0.9192	0.0317	0.0346	-0.0030	0.0142	0.0143	-0.0001	
EARNG_24	0.0000	1.0000	0.0534	0.0578	-0.0043	0.0232	0.0232	0.0000	
EARNG_60	0.0749	0.7843	0.1814	0.1848	-0.0033	0.1179	0.1168	0.0011	
EPS	0.0010	0.9751	1.5792	1.5775	0.0016	0.4300	0.4300	0.0000	
LN_EPS	0.0149	0.9028	-0.3372	-0.3461	0.0090	-0.5110	-0.5534	0.0425	
ROE	0.0568	0.8116	0.3709	0.3605	0.0105	0.2107	0.2001	0.0106	
PRETAX_PM	0.0050	0.9434	0.0931	0.0943	-0.0012	0.0914	0.0914	0.0000	
ACCITA	0.0487	0.8253	-0.0301	-0.0282	-0.0019	-0.0216	-0.0198	-0.0018	
CH_CF	0.0101	0.9200	0.5459	0.5617	-0.0159	0.1202	0.1351	-0.0149	
CH_ARISALES	0.0068	0.9341	0.2125	0.1944	0.0181	0.2283	0.2090	0.0173	
CH_ASSTURN	0.0400	0.8416	0.0526	0.0506	0.0020	-0.0087	-0.0052	-0.0014	
CH_CURRENT	0.1847	0.6673	0.0452	0.0415	0.0037	0.0032	0.0000	0.0032	
CH_QUICK	0.3562	0.5506	0.0468	0.0340	0.0128	-0.0385	-0.0400	0.0015	
CH_INVTURN	0.3467	0.5560	0.9259	0.9390	-0.0131	0.0617	-0.1790	0.2607	
INVITA	0.0104	0.9187	0.1533	0.1542	-0.0009	0.1361	0.1361	0.0000	
CH_INVITA	0.2265	0.6342	0.0087	0.0109	-0.0021	0.0000	0.0000	0.0000	
CH_INV	0.2378	0.6258	0.8698	0.9087	-0.0389	0.2658	0.2658	0.0000	
CH_SALES	0.0566	0.8119	0.3287	0.3289	-0.0003	0.1217	0.1226	-0.0008	
CH_DEP	0.0000	0.9986	0.7289	0.7332	-0.0043	0.2508	0.2508	0.0000	
CH_OPS	0.0103	0.9192	0.0239	0.0299	-0.0060	0.0476	0.0528	-0.0052	
CH_ROE	0.1669	0.6829	0.0683	0.0661	0.0022	-0.0002	-0.0061	0.0060	
CAPGEAR	0.0252	0.8739	0.2057	0.2047	0.0010	0.1902	0.2030	-0.0128	
CH_CAPGEAR	0.0112	0.9156	0.4779	0.5056	-0.0277	0.0135	0.0135	0.0000	
ROA	0.0087	0.9256	0.0715	0.0712	0.0003	0.0666	0.0666	0.0000	
GM	0.0165	0.8978	0.2216	0.2174	0.0042	0.1522	0.1518	0.0003	
CH_EBTISALES	0.0006	0.9778	0.3024	0.3186	-0.0162	-0.0111	-0.0111	0.0000	
SALESICASH	0.0011	0.9731	25.5793	26.5491	-0.9698	7.2024	7.3364	-0.1341	
LN_SALESICASH	0.0011	0.9741	2.1793	2.2017	-0.0224	2.0308	2.0308	0.0000	
CH_TA	0.0043	0.9479	0.3334	0.3374	-0.0040	0.1761	0.1761	0.0000	
CASHIDEBT	0.0471	0.8282	2.8698	3.0394	-0.1696	0.0638	0.0568	0.0071	
WCITA	0.0207	0.8857	0.8229	0.8222	0.0007	0.7183	0.6866	0.0318	
OPINCITA	0.0357	0.8502	0.0998	0.1004	-0.0007	0.0934	0.0944	-0.0011	
DIVICF	0.0619	0.7747	-1.0426	-1.1489	0.1063	0.0000	0.0000	0.0000	
DY	0.0651	0.7987	0.0335	0.0341	-0.0006	0.0203	0.0210	-0.0008	
CH_INVISALES	0.2476	0.6189	0.2308	0.2588	-0.0280	-0.0177	0.0325	-0.0502	
CH_ARISALES	0.2876	0.5918	0.0742	0.0601	0.0140	0.0124	0.0014	0.0110	
CH_SALESIGM	0.0090	0.9242	0.0126	-0.0221	0.0347	0.0000	0.0000	0.0000	
CH_SAISALES	0.0000	0.9948	0.0672	0.0822	-0.0149	0.0832	0.0832	0.0000	
LABOUR	0.0494	0.8241	-0.1990	-0.2035	0.0045	-0.1153	-0.1187	0.0034	
NTC	0.0199	0.8879	85.3508	85.3648	-0.0138	61.5664	61.5664	0.0000	
GFORECAST_12	0.0633	0.8013	2.5038	2.4719	0.0319	1.6000	1.5800	0.0200	
REVISION_12	0.0000	0.9996	-0.0778	-0.0720	-0.0058	-0.0685	-0.0685	0.0000	
REVISION_24	0.0825	0.7740	-0.0593	-0.0553	-0.0040	-0.0518	-0.0693	0.0175	
REVISION_36	0.0000	0.9964	-0.0776	-0.0849	0.0073	-0.1883	-0.1883	0.0000	
RSTRENGTH_ALSI	0.0429	0.8358	0.4599	0.4599	0.0000	0.4348	0.4306	0.0042	
RSTRENGTH_SUB	0.0077	0.9300	0.4662	0.4674	-0.0013	0.4405	0.4465	-0.0061	
CH_RSTRENGTH_ALSI	0.0217	0.8830	0.0603	0.0639	-0.0036	0.0486	0.0540	-0.0054	
CH_RSTRENGTH_SUB	0.1467	0.7017	0.0617	0.0653	-0.0036	0.0318	0.0395	-0.0077	
WRSTRENGTH_ALSI	0.0426	0.8364	0.4708	0.4690	0.0018	0.4589	0.4506	0.0083	
WRSTRENGTH_SUB	0.0707	0.7904	0.4741	0.4734	0.0007	0.4646	0.4493	0.0153	
POS_SALES	0.0499	0.8232	11.0274	10.8746	0.1528	8.0000	7.0000	1.0000	
POS_PRETAX	0.0725	0.7877	13.3354	13.1503	0.1851	10.0000	10.0000	0.0000	
POS_OP	0.0001	0.9916	12.6625	12.5637	0.0989	9.0000	9.0000	0.0000	
POS_NET	0.0425	0.8366	14.0515	13.9085	0.1430	10.0000	10.0000	0.0000	
POS_ROE	0.0150	0.9026	10.6224	10.5184	0.1061	7.0000	7.0000	0.0000	

Appendix C.10. Significant Loser Evolution Signals: 3 Months

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between loser distributions at the start and three months before the start of extreme performance is shown for each variable. The highlighted cells indicate those variables which are significantly different between these shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the two portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger (+), smaller (-) or not significantly different (blank) in loser shares at the start of extreme performance as compared to the same shares three months before the start of extreme performance. If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

Variable	Median Test		Mean			Median			Summary
	Period 0 ≠ Period -3								
	T	Ho: diff != 0	Period 0	Period -3	Difference	Period 0	Period -3	Difference	
INST_OWN	5.5706	0.0183	0.0076	0.0017	0.0060	0.0000	0.0000	0.0000	
MAN_OWN	2.8069	0.0939	0.5189	0.5831	-0.0642	0.5700	0.7000	-0.1300	
PE	0.6342	0.4268	16.1412	16.0594	0.0818	11.8000	11.2000	0.6000	
EY	1.6865	0.1941	0.0890	0.1076	-0.0036	0.0794	0.0837	-0.0043	
MV	0.1177	0.7316	3477.6727	3369.5759	108.0968	638.6700	654.1100	-15.4400	
LN_MV	0.1167	0.7326	6.6344	6.6195	0.0149	6.4594	6.4833	-0.0239	
BETA	0.0113	0.9154	0.5588	0.5574	0.0014	0.5320	0.5320	0.0000	
MTB	0.8154	0.3665	2.6484	2.5602	0.0881	1.7300	1.8250	0.1050	
VOL_3	0.0167	0.8972	2.6830	2.5192	0.1637	0.8900	0.8785	0.0115	
LN_VOL_3	0.0095	0.9224	-0.4056	-0.3880	-0.0176	-0.3708	-0.3789	0.0081	
VOL_6	0.0090	0.9243	1.9830	1.8713	0.1116	0.5414	0.5480	-0.0046	
LN_VOL_6	0.0087	0.9255	-0.6442	-0.6269	-0.0173	-0.6129	-0.6008	-0.0121	
VOL_12	0.2278	0.6331	1.7240	1.6029	0.1211	0.5055	0.5308	-0.0253	
LN_VOL_12	0.2598	0.6103	-0.7421	-0.6543	-0.0877	-0.6822	-0.6239	-0.0583	
VOL_18	0.3658	0.5453	1.6594	1.5353	0.1241	0.5574	0.5841	-0.0267	
LN_VOL_18	0.4059	0.5241	-0.7120	-0.6312	-0.0806	-0.5844	-0.5363	-0.0481	
VOL_24	0.0494	0.8240	1.6075	1.4553	0.1522	0.5722	0.5879	-0.0158	
LN_VOL_24	0.0649	0.7989	-0.7050	-0.6511	-0.0539	-0.5583	-0.5305	-0.0278	
SDEV_VOL	1.0664	0.3018	2.1109	2.0353	0.0756	0.4990	0.5958	-0.0966	
LN_SDEV_VOL	1.0032	0.3165	-0.6218	-0.5629	-0.0589	-0.6928	-0.5182	-0.1746	
VOLINOSHARES	0.3607	0.5481	0.0016	0.0015	0.0001	0.0004	0.0004	0.0000	
LN_VOLINOSHARES	0.4010	0.5266	-7.8811	-7.8225	-0.0586	-7.7491	-7.7095	-0.0396	
AGE	0.1617	0.6876	8.7273	8.7571	-0.0298	7.4778	7.4083	0.0694	
MOM_1	0.2369	0.6266	0.0052	0.0057	-0.0006	0.0000	0.0021	-0.0021	
MOM_3	0.9753	0.3234	0.0304	0.0213	0.0091	0.0272	0.0109	0.0163	
MOM_6	2.4001	0.1213	0.0692	0.0386	0.0306	0.0246	0.0000	0.0246	
MOM_12	0.5486	0.4589	0.1045	0.0895	0.0150	0.0087	-0.0170	0.0257	
MOM_18	0.6655	0.4146	0.1612	0.1431	0.0181	-0.0073	-0.0318	0.0244	
MOM_24	0.7629	0.3824	0.2879	0.2977	-0.0098	0.0362	-0.0057	0.0419	
NOSHARES	0.2099	0.6468	187946.4792	182704.6803	5241.7989	117234.0000	112272.0000	4962.0000	
LN_NOSHARES	0.2099	0.6468	11.6389	11.6084	0.0305	11.6719	11.6287	0.0432	
MAXP_12	0.9564	0.3281	0.7731	0.7634	0.0097	0.8300	0.7792	0.0208	
MAXP_24	2.4029	0.1211	0.8745	0.8603	0.0142	0.7217	0.6923	0.0294	
MAXP_60	0.6479	0.4209	0.8015	0.8953	0.0063	0.6562	0.6343	0.0209	
EARN	0.0253	0.8737	177121.3374	165831.1109	11290.2265	55756.0000	49347.5000	6408.5000	
EARNG_3	0.0075	0.9310	0.0032	0.0045	-0.0013	0.0000	0.0000	0.0000	
EARNG_6	0.0190	0.8904	0.0080	0.0186	-0.0107	0.0000	0.0000	0.0000	
EARNG_12	0.0048	0.9450	0.0317	0.0387	-0.0071	0.0142	0.0141	0.0001	
EARNG_24	0.0154	0.9014	0.0534	0.0555	-0.0020	0.0232	0.0230	0.0002	
EARNG_60	0.3038	0.5815	0.1614	0.1487	0.0127	0.1179	0.1157	0.0021	
EPS	0.1088	0.7415	1.5792	1.5398	0.0394	0.4300	0.4300	0.0000	
LN_EPS	0.1354	0.7129	-0.3372	-0.3565	0.0194	-0.5110	-0.5539	0.1430	
ROE	1.1616	0.2811	0.3709	0.3259	0.0450	0.2107	0.1942	0.0165	
PRETAX_PM	0.0377	0.8460	0.0931	0.0936	-0.0003	0.0914	0.0839	0.0075	
ACQTA	0.9523	0.3291	-0.0301	-0.0250	-0.0051	-0.0216	-0.0166	-0.0050	
CH_CF	0.2113	0.6458	0.5459	0.5588	-0.0129	0.1202	0.1361	-0.0149	
CH_ARISALES	0.3924	0.5310	0.2125	0.1798	0.0327	0.2263	0.2019	0.0244	
CH_ASSTURN	0.2844	0.5939	0.0528	0.0466	0.0061	-0.0067	-0.0052	-0.0014	
CH_CURRENT	0.7254	0.3944	0.0452	0.0372	0.0080	0.0032	-0.0132	0.0164	
CH_QUICK	1.5908	0.2072	0.0468	0.0205	0.0263	-0.0386	-0.0400	0.0015	
CH_INVTURN	0.8315	0.3618	0.9259	1.0101	-0.0842	0.0617	-0.1790	0.2607	
INVITA	0.0754	0.7836	0.1533	0.1519	0.0014	0.1361	0.1361	0.0000	
CH_INVITA	1.4329	0.2313	0.0087	0.0133	-0.0046	0.0000	0.0000	0.0000	
CH_INV	0.7309	0.3926	0.8698	0.8732	-0.0034	0.2658	0.2658	0.0000	
CH_SALES	0.0922	0.7614	0.3287	0.3018	0.0268	0.1217	0.1253	-0.0036	
CH_DEP	0.1953	0.6586	0.7289	0.6881	0.0408	0.2506	0.2506	0.0000	
CH_DPS	0.0888	0.7657	0.0239	0.0516	-0.0277	0.0476	0.0556	-0.0079	
CH_ROE	1.0678	0.3015	0.0883	0.0443	0.0239	-0.0002	-0.0081	0.0080	
CAPGEAR	0.1716	0.6787	0.2057	0.2024	0.0033	0.1902	0.2055	-0.0153	
CH_CAPGEAR	0.0584	0.8091	0.4779	0.5003	-0.0224	0.0135	0.0135	0.0000	
ROA	0.1999	0.6548	0.0715	0.0704	0.0011	0.0686	0.0695	-0.0029	
GM	0.2663	0.6127	0.2218	0.2121	0.0096	0.1522	0.1171	0.0351	
CH_EBTISALES	0.0001	0.9930	0.3024	0.3354	-0.0330	-0.0111	-0.0111	0.0000	
SALESICASH	0.0510	0.8212	28.5793	28.8598	-3.0805	7.2024	7.6202	-0.4179	
LN_SALESICASH	0.3908	0.5319	2.1793	2.2449	-0.0656	2.0306	2.0748	-0.0440	
CH_TA	0.0534	0.8173	0.3334	0.3145	0.0189	0.1751	0.1736	0.0015	
CASHIDEBT	0.4822	0.4874	2.8698	3.3641	-0.4943	0.0638	0.0513	0.0125	
WCITA	0.6245	0.4689	0.8229	0.8151	0.0079	0.7183	0.6860	0.0324	
OPINCITA	0.1974	0.6569	0.0998	0.0995	0.0003	0.0934	0.0960	-0.0026	
DIVICF	0.5905	0.4422	-1.0426	-1.1295	0.0870	0.0000	0.0000	0.0000	
DY	0.8389	0.3603	0.0335	0.0362	-0.0027	0.0203	0.0229	-0.0026	
CH_INVISALES	0.5096	0.4753	0.2308	0.2642	-0.0334	-0.0177	0.0325	-0.0502	
CH_ARISALES	1.7089	0.1911	0.0742	0.0507	0.0235	0.0124	-0.0037	0.0161	
CH_SALESIGM	0.0039	0.9500	0.0126	-0.0540	0.0666	0.0000	0.0000	0.0000	
CH_SAISALES	0.2227	0.6370	0.0672	0.0826	-0.0154	0.0832	0.0832	0.0000	
LABOUR	1.6649	0.1969	-0.1990	-0.2226	0.0237	-0.1153	-0.1615	0.0463	
NTC	0.0008	0.9799	85.3508	83.7244	1.6264	61.5664	61.5664	0.0000	
GFORECAST_12	0.2539	0.6144	2.5038	2.3591	0.1447	1.6000	1.4500	0.1500	
REVISION_12	0.1842	0.6678	-0.0778	-0.0587	-0.0191	-0.0686	-0.0737	0.0052	
REVISION_24	0.2068	0.6493	-0.0593	-0.0821	0.0228	-0.0618	-0.0647	0.0030	
REVISION_36	0.0000	0.9945	-0.0776	-0.1251	0.0474	-0.1883	-0.1883	0.0000	
RSTRENGTH_ALSI	0.5486	0.4589	0.4599	0.4461	0.0138	0.4348	0.4161	0.0187	
RSTRENGTH_SUB	0.1488	0.6997	0.4662	0.4538	0.0124	0.4405	0.4329	0.0075	
CH_RSTRENGTH_ALSI	0.0430	0.8357	0.0603	0.0497	0.0106	0.0486	0.0434	0.0052	
CH_RSTRENGTH_SUB	0.4592	0.4980	0.0617	0.0496	0.0121	0.0318	0.0439	-0.0120	
WRSTRENGTH_ALSI	1.0727	0.3003	0.4708	0.4533	0.0175	0.4589	0.4324	0.0265	
WRSTRENGTH_SUB	0.2541	0.6142	0.4741	0.4586	0.0144	0.4646	0.4393	0.0253	
POS_SALES	0.2058	0.6502	11.0274	10.7120	0.3154	8.0000	7.0000	1.0000	
POS_PRETAX	0.5675	0.4513	13.3354	12.8429	0.4925	10.0000	10.0000	0.0000	
POS_OP	0.2431	0.6220	12.8825	12.5393	0.1232	9.0000	9.0000	0.0000	
POS_NET	0.2108	0.6463	14.0515	13.6139	0.4376	10.0000	10.0000	0.0000	
POS_ROE	0.0019	0.9656	10.6224	10.4216	0.2009	7.0000	7.0000	0.0000	

Appendix C.11. Significant Loser Evolution Signals: 6 Months

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between loser distributions at the start and six months before the start of extreme performance is shown for each variable. The highlighted cells indicate those variables which are significantly different between these shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the two portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger (+), smaller (-) or not significantly different (blank) in loser shares at the start of extreme performance as compared to the same shares six months before the start of extreme performance. If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

Variable	Median Test		Mean			Median			Summary
	Period 0 # Period -6								
	T	Ha: diff != 0	Period 0	Period -6	Difference	Period 0	Period -6	Difference	
INST_OWN	2.2236	0.1359	0.0076	0.0018	0.0059	0.0000	0.0000	0.0000	
MAN_OWN	5.7802	0.0164	0.5189	0.6025	-0.0836	0.5700	0.7100	-0.1400	-
PE	0.7367	0.3907	16.1412	17.3304	-1.1892	11.8000	11.2000	0.6000	
EY	2.4711	0.1160	0.0990	0.1085	-0.0095	0.0794	0.0840	-0.0047	
MV	0.2673	0.6052	3477.8727	3312.7585	164.9142	638.6700	686.8200	-48.1500	
LN_MV	0.2690	0.6040	6.8344	6.8355	-0.0011	6.4594	6.5582	-0.0988	
BETA	0.0065	0.9356	0.5588	0.5578	0.0010	0.5320	0.5320	0.0000	
MTB	0.3163	0.5739	2.6484	2.5699	0.0785	1.7300	1.6700	0.0600	
VOL_3	0.0170	0.8963	2.6830	2.3504	0.3326	0.8900	0.8792	0.0108	
LN_VOL_3	0.0177	0.8943	-0.4056	-0.4374	0.0318	-0.3706	-0.3863	0.0155	
VOL_6	2.2939	0.1299	1.9830	1.8587	0.1242	0.5414	0.6383	-0.0969	
LN_VOL_6	2.1992	0.1381	-0.6442	-0.5907	-0.0535	-0.6129	-0.4469	-0.1640	
VOL_12	1.9159	0.1663	1.7240	1.6401	0.0839	0.5055	0.5898	-0.0843	
LN_VOL_12	2.0079	0.1565	-0.7421	-0.6108	-0.1313	-0.6822	-0.5132	-0.1690	
VOL_18	0.7544	0.3851	1.6594	1.5586	0.1008	0.5574	0.6043	-0.0469	
LN_VOL_18	0.8131	0.3672	-0.7120	-0.6337	-0.0783	-0.5844	-0.5024	-0.0820	
VOL_24	0.1246	0.7241	1.6075	1.5242	0.0833	0.5722	0.5968	-0.0246	
LN_VOL_24	0.1494	0.6992	-0.7050	-0.6458	-0.0592	-0.5563	-0.5051	-0.0533	
SDEV_VOL	2.5827	0.1080	2.1109	1.9444	0.1666	0.4990	0.6271	-0.1281	
LN_SDEV_VOL	2.4837	0.1150	-0.6218	-0.5183	-0.1035	-0.6928	-0.4667	-0.2261	
VOLINOSHARES	0.5415	0.4618	0.0016	0.0014	0.0001	0.0004	0.0005	0.0000	
LN_VOLINOSHARES	0.5927	0.4414	-7.8811	-7.8485	-0.0326	-7.7491	-7.8700	-0.0790	
AGE	0.9598	0.3272	8.7273	8.7661	-0.0388	7.4778	7.2472	0.2306	
MOM_1	0.5454	0.4602	0.0052	0.0002	0.0050	0.0000	0.0000	0.0000	
MOM_3	1.1634	0.2808	0.0304	0.0103	0.0201	0.0272	0.0021	0.0250	
MOM_6	3.7687	0.0522	0.0692	0.0238	0.0454	0.0246	-0.0034	0.0280	
MOM_12	1.2787	0.2581	0.1045	0.0540	0.0506	0.0067	-0.0241	0.0327	
MOM_18	0.0235	0.8781	0.1612	0.1792	-0.0181	-0.0073	-0.0154	0.0082	
MOM_24	0.3208	0.5711	0.2879	0.3824	-0.0745	0.0362	0.0252	0.0110	
NOSHARES	0.7548	0.3850	187946.4792	176756.7405	11189.7387	117234.0000	102638.0000	14596.0000	
LN_NOSHARES	0.7548	0.3850	11.6389	11.5780	0.0609	11.6719	11.5390	0.1330	
MAXP_12	2.7203	0.0991	0.7731	0.7481	0.0250	0.8000	0.7720	0.0280	
MAXP_24	3.6401	0.0564	0.8745	0.8541	0.0204	0.7217	0.6875	0.0342	
MAXP_60	0.9660	0.3257	0.9015	0.8940	0.0076	0.8552	0.8250	0.0302	
EARN	0.0165	0.8978	177121.3374	154840.7918	22280.5457	55756.0000	55052.0000	704.0000	
EARNG_3	0.0280	0.8719	0.0032	0.0081	-0.0050	0.0000	0.0000	0.0000	
EARNG_6	0.0012	0.9725	0.0080	0.0235	-0.0155	0.0000	0.0000	0.0000	
EARNG_12	4.6280	0.0315	0.0317	0.0347	-0.0030	0.0142	0.0104	0.0038	+
EARNG_24	0.0419	0.8379	0.0534	0.0534	0.0000	0.0232	0.0226	0.0006	
EARNG_60	0.0000	0.9982	0.1614	0.1566	0.0049	0.1179	0.1168	0.0010	
EPS	0.3013	0.5831	1.5792	1.4681	0.1111	0.4300	0.4300	0.0000	
LN_EPS	0.6982	0.4034	-0.3372	-0.4083	0.0712	-0.5110	-0.6931	0.1822	
ROE	2.1216	0.1452	0.3709	0.2700	0.1010	0.2107	0.1933	0.0174	
PRETAX_PM	0.1543	0.6945	0.0931	0.0895	0.0036	0.0914	0.0839	0.0075	
ACCITA	2.4347	0.1187	-0.0301	-0.0205	-0.0096	-0.0216	-0.0151	-0.0065	
CH_CF	0.1997	0.6550	0.5459	0.5000	0.0459	0.1202	0.1351	-0.0149	
CH_ARISALES	1.7284	0.1886	0.2125	0.2503	-0.0378	0.2263	0.1914	0.0349	
CH_ASSTURN	4.4090	0.0358	0.0526	0.0665	-0.0139	-0.0067	0.0189	-0.0255	-
CH_CURRENT	1.2568	0.2623	0.0462	0.0278	0.0173	0.0032	-0.0156	0.0188	
CH_QUICK	2.9752	0.0846	0.0468	0.0014	0.0454	-0.0386	-0.0480	0.0075	
CH_INVTURN	1.1048	0.2932	0.9259	-0.3677	1.2936	0.0817	-0.1790	0.2607	
INVITA	1.4247	0.2326	0.1533	0.1553	-0.0020	0.1361	0.1542	-0.0182	
CH_INVITA	3.1636	0.0753	0.0087	0.0150	-0.0063	0.0000	0.0026	-0.0026	
CH_INV	1.4494	0.2286	0.8698	0.8491	0.0207	0.2658	0.2834	-0.0176	
CH_SALES	0.8008	0.3709	0.3287	0.2932	0.0354	0.1217	0.1438	-0.0221	
CH_DEP	1.1592	0.2816	0.7289	0.6144	0.1145	0.2508	0.2062	0.0446	
CH_DPS	2.6827	0.1014	0.0239	0.0843	-0.0603	0.0476	0.1000	-0.0524	
CH_ROE	1.3656	0.2428	0.0683	0.0078	0.0607	-0.0002	-0.0069	0.0068	
CAPGEAR	0.1726	0.6778	0.2067	0.1955	0.0103	0.1902	0.2104	-0.0202	
CH_CAPGEAR	2.8346	0.0923	0.4779	0.4604	0.0175	0.0135	0.0051	0.0084	
ROA	1.4762	0.2244	0.0715	0.0685	0.0030	0.0666	0.0717	-0.0051	
GM	0.5223	0.4699	0.2216	0.2105	0.0111	0.1522	0.1201	0.0320	
CH_EBITSALES	0.1653	0.6843	0.3024	0.2864	0.0160	-0.0111	-0.0211	0.0100	
SALESICASH	1.8741	0.1710	25.5793	31.0923	-5.5130	7.2024	8.0177	-0.8154	
LN_SALESICASH	2.8729	0.0901	2.1793	2.3303	-0.1509	2.0308	2.0924	-0.0616	
CH_TA	1.4920	0.2219	0.3334	0.2847	0.0487	0.1751	0.1648	0.0103	
CASHIDEBT	0.4276	0.5132	2.8698	3.2785	-0.4087	0.0838	0.0474	0.0164	
WCITA	1.4863	0.2259	0.6229	0.6100	0.0129	0.7183	0.6658	0.0525	
OPINCITA	0.2583	0.6113	0.0998	0.0992	0.0006	0.0934	0.0980	-0.0026	
DIVICF	2.0680	0.1506	-1.0426	-1.3425	0.2999	0.0000	0.0000	0.0000	
DY	1.0210	0.3123	0.0335	0.0376	-0.0042	0.0203	0.0231	-0.0029	
CH_NVISALES	0.5234	0.4694	0.2308	0.3067	-0.0759	-0.0177	0.0325	-0.0502	
CH_ARISALES	6.0326	0.0140	0.0742	0.0303	0.0438	0.0124	-0.0644	0.0768	+
CH_SALESIGM	0.0701	0.7913	0.0126	-0.0810	0.0937	0.0000	0.0000	0.0000	
CH_SAISALES	1.6430	0.1999	0.0672	-0.0348	0.1020	0.0832	0.0070	0.0762	
LABOUR	2.2124	0.1369	-0.1990	-0.2343	0.0353	-0.1153	-0.1616	0.0463	
NTC	0.3228	0.5699	85.3508	86.3677	-1.0170	61.5664	61.5664	0.0000	
GFORECAST_12	0.8232	0.3643	2.5038	2.2620	0.2418	1.8000	1.3700	0.2300	
REVISION_12	0.2990	0.5845	-0.0778	-0.0255	-0.0523	-0.0685	-0.0574	-0.0112	
REVISION_24	0.4518	0.5015	-0.0593	-0.0485	-0.0108	-0.0516	-0.0667	0.0150	
REVISION_36	0.0686	0.7933	-0.0778	-0.1702	0.0926	-0.1883	-0.2196	0.0313	
RSTRENGTH_ALSI	1.2787	0.2581	0.4599	0.4420	0.0179	0.4348	0.4078	0.0272	
RSTRENGTH_SUB	1.5694	0.2103	0.4662	0.4494	0.0168	0.4405	0.4202	0.0203	
CH_RSTRENGTH_ALSI	0.0319	0.8583	0.0803	0.0495	0.0108	0.0486	0.0448	0.0038	
CH_RSTRENGTH_SUB	0.8964	0.3432	0.0617	0.0468	0.0149	0.0318	0.0466	-0.0147	
WRSTRENGTH_ALSI	1.5620	0.2114	0.4708	0.4513	0.0196	0.4589	0.4317	0.0272	
WRSTRENGTH_SUB	0.2689	0.5922	0.4741	0.4582	0.0159	0.4646	0.4386	0.0260	
POS_SALES	0.5890	0.4428	11.0274	10.3540	0.6734	8.0000	7.0000	1.0000	
POS_PRETAX	1.9730	0.1601	13.3354	12.3789	0.9585	10.0000	9.0000	1.0000	
POS_OP	0.6474	0.4210	12.6625	12.3529	0.3096	9.0000	9.0000	0.0000	
POS_NET	0.8218	0.3647	14.0515	13.1667	0.8849	10.0000	9.0000	1.0000	
POS_ROE	0.0212	0.8844	10.6224	10.0827	0.5398	7.0000	6.0000	1.0000	

Appendix C.12. Significant Loser Evolution Signals: 9 Months

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between loser distributions at the start and nine months before the start of extreme performance is shown for each variable. The highlighted cells indicate those variables which are significantly different between these shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the two portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger (+), smaller (-) or not significantly different (blank) in loser shares at the start of extreme performance as compared to the same shares nine months before the start of extreme performance. If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

Variable	Median Test		Mean			Median			Summary
	Period 0 ≠ Period -9								
	T	Ha: diff != 0	Period 0	Period -9	Difference	Period 0	Period -9	Difference	
INST_OWN	0.4626	0.4964	0.0078	0.0021	0.0056	0.0000	0.0000	0.0000	
MAN_OWN	0.0706	0.7902	0.5189	0.4937	0.0252	0.5700	0.5700	-0.1000	
PE	0.1605	0.6887	16.1412	19.7348	-3.5936	11.8000	11.5000	0.3000	
EY	1.2592	0.2618	0.0990	0.1107	-0.0117	0.0794	0.0830	-0.0036	
MV	0.6580	0.4173	3477.6727	3406.5261	71.1466	838.6700	730.4900	91.8200	
LN_MV	0.6251	0.4366	6.6344	6.6585	-0.0241	6.4594	6.5937	-0.1343	
BETA	0.0118	0.9137	0.5588	0.5579	0.0009	0.5320	0.5320	0.0000	
MTB	0.0093	0.9231	2.6484	2.6883	-0.0399	1.7300	1.7000	0.0300	
VC..._3	1.6019	0.2056	2.6830	2.5931	0.0899	0.8900	0.7890	-0.0991	
LN_VOL_3	1.5187	0.2178	-0.4056	-0.3290	-0.0766	-0.3706	-0.2340	-0.1366	
VOL_6	6.4432	0.0111	1.9830	2.0035	-0.0205	0.5414	0.7728	-0.2314	-
LN_VOL_6	6.1063	0.0135	-0.8442	-0.4676	-0.1766	-0.6129	-0.2574	-0.3554	-
VOL_12	7.2692	0.0070	1.7240	1.6738	0.0502	0.5055	0.6663	-0.1606	-
LN_VOL_12	7.7827	0.0053	-0.7421	-0.5472	-0.1949	-0.6822	-0.4045	-0.2777	-
VOL_18	2.0739	0.1498	1.6594	1.5373	0.1221	0.5574	0.6181	-0.0607	
LN_VOL_18	2.1686	0.1409	-0.7120	-0.5987	-0.1133	-0.5844	-0.4829	-0.1035	
VOL_24	0.9857	0.3206	1.6075	1.5218	0.0856	0.5722	0.6737	-0.1015	
LN_VOL_24	1.0526	0.3048	-0.7050	-0.6110	-0.0940	-0.5583	-0.3897	-0.1687	
SDEV_VOL	4.4776	0.0343	2.1109	1.8938	0.2171	0.4990	0.8368	-0.1379	-
LN_SDEV_VOL	4.3483	0.0371	-0.6218	-0.4673	-0.1545	-0.6928	-0.4512	-0.2415	-
VOLINOSHARES	0.7978	0.3717	0.0016	0.0014	0.0001	0.0004	0.0005	-0.0001	
LN_VOLINOSHARES	0.8501	0.3585	-7.8811	-7.8470	-0.0341	-7.7491	-7.8200	-0.1291	
AGE	3.5582	0.0593	8.7273	8.6482	0.0791	7.4778	7.0111	0.4667	
MOM_1	0.2321	0.6299	0.0052	0.0024	0.0027	0.0000	0.0000	0.0000	
MOM_3	1.7434	0.1867	0.0304	0.0087	0.0217	0.0272	0.0000	0.0272	
MOM_6	0.7371	0.3906	0.0692	0.0354	0.0338	0.0246	0.0129	0.0117	
MOM_12	1.1754	0.2783	0.1045	0.0645	0.0400	0.0087	-0.0234	0.0321	
MOM_18	0.3804	0.5374	0.1612	0.2038	-0.0427	-0.0073	0.0195	-0.0267	
MOM_24	1.7903	0.1809	0.2879	0.4281	-0.1402	0.0362	0.0912	-0.0550	
NOSHARES	0.9312	0.3346	187948.4792	176891.0362	11055.4430	117234.0000	100259.5000	16974.5000	
LN_NOSHARES	0.9312	0.3346	11.8389	11.8649	0.0740	11.8719	11.5155	0.1564	
MAXP_12	2.0335	0.1539	0.7731	0.7427	0.0304	0.8000	0.7753	0.0247	
MAXP_24	1.4902	0.2222	0.8745	0.8647	0.0098	0.7217	0.7018	0.0201	
MAXP_60	0.9766	0.3230	0.8015	0.8087	-0.0072	0.8552	0.8278	0.0273	
EARN	0.0527	0.8184	177121.3374	145779.0699	31342.2675	55756.0000	54409.0000	1347.0000	
EARNG_3	0.0000	0.9972	0.0032	0.0077	-0.0045	0.0000	0.0000	0.0000	
EARNG_6	1.9629	0.1591	0.0080	0.0154	-0.0074	0.0000	0.0000	0.0000	
EARNG_12	15.7543	0.0001	0.0317	0.0222	0.0095	0.0142	0.0077	0.0064	+
EARNG_24	0.0267	0.8703	0.0534	0.0499	0.0035	0.0232	0.0238	-0.0004	
EARNG_60	0.3530	0.5524	0.1614	0.1711	-0.0097	0.1179	0.1214	-0.0035	
EPS	0.7000	0.4028	1.5792	1.3708	0.2084	0.4300	0.4000	0.0300	
LN_EPS	1.1683	0.2796	-0.3372	-0.4855	0.1283	-0.5110	-0.6931	0.1822	
ROE	4.3621	0.0368	0.3709	0.2266	0.1443	0.2107	0.1785	0.0322	+
PRETAX_PM	0.0099	0.9208	0.0931	0.0981	-0.0050	0.0914	0.0644	0.0070	
ACCITA	10.3202	0.0013	-0.0301	-0.0121	-0.0180	-0.0216	-0.0037	-0.0180	-
CH_CF	0.0073	0.9321	0.5459	0.4299	0.1160	0.1202	0.1351	-0.0149	
CH_ARISALES	3.8906	0.0485	0.2125	0.2982	-0.0858	0.2263	0.1851	0.0412	+
CH_ASSTURN	5.6025	0.0179	0.0526	0.0706	-0.0180	-0.0067	0.0359	-0.0425	-
CH_CURRENT	0.6185	0.4316	0.0452	0.0194	0.0257	0.0032	0.0000	0.0032	
CH_QUICK	1.8756	0.1955	0.0468	-0.0082	0.0550	-0.0385	-0.0400	0.0015	
CH_INVTURN	0.9687	0.3250	0.9259	-1.6068	2.5327	0.0617	-0.1790	0.2907	
INVITA	6.0727	0.0138	0.1533	0.1582	-0.0049	0.1361	0.1674	-0.0313	-
CH_INVITA	2.0381	0.1535	0.0087	0.0127	-0.0040	0.0000	0.0000	0.0000	
CH_INV	0.5758	0.4480	0.8698	0.6444	0.2254	0.2658	0.2658	0.0000	
CH_SALES	1.5862	0.2078	0.3287	0.2486	0.0801	0.1217	0.1438	-0.0221	
CH_DEP	6.9247	0.0085	0.7289	0.4863	0.2426	0.2508	0.1412	0.1096	+
CH_DPS	3.9697	0.0465	0.0239	0.1158	-0.0919	0.0476	0.1084	-0.0608	-
CH_ROE	0.4359	0.5091	0.0883	-0.0161	0.0643	-0.0002	-0.0065	0.0064	
CAPGEAR	0.2028	0.6525	0.2057	0.1865	0.0192	0.1902	0.2104	-0.0202	
CH_CAPGEAR	4.9650	0.0258	0.4779	0.4350	0.0428	0.0135	0.0000	0.0135	+
ROA	2.1038	0.1469	0.0715	0.0659	0.0056	0.0666	0.0737	-0.0071	
GM	0.8244	0.3639	0.2216	0.2143	0.0073	0.1522	0.1201	0.0320	
CH_EBTISALES	0.3006	0.5836	0.3024	0.2300	0.0724	-0.0111	-0.0119	0.0008	
SALESICASH	6.0334	0.0140	26.5793	30.2843	-4.7050	7.2024	8.1046	-0.9022	-
LN_SALESICASH	6.2734	0.0123	2.1793	2.3794	-0.2001	2.0308	2.0970	-0.0662	-
CH_TA	7.5840	0.0059	0.3334	0.2240	0.1095	0.1751	0.1276	0.0475	+
CASHIDEBT	0.7704	0.3801	2.8698	2.8025	0.0673	0.0638	0.0337	0.0301	
WCITA	5.9640	0.0144	0.8229	0.8015	0.0215	0.7183	0.6477	0.0707	+
OP WCITA	0.3299	0.5657	0.0998	0.0998	0.0000	0.0934	0.0985	-0.0031	
DIVICF	3.7326	0.0534	-1.0426	-1.5179	0.4753	0.0000	0.0000	0.0000	
DY	1.3553	0.2444	0.0335	0.0375	-0.0040	0.0203	0.0239	-0.0036	
CH_INVISALES	0.3456	0.5568	0.2308	0.2863	-0.0555	-0.0177	0.0325	-0.0502	
CH_ARISALES	9.0024	0.0027	0.0742	0.0146	0.0595	0.0124	-0.0824	0.0948	+
CH_SALESIGM	0.0800	0.7773	0.0126	-0.2058	0.2185	0.0000	0.0000	0.0000	
CH_SAISALES	4.9729	0.0257	0.0672	-0.1170	0.1842	0.0632	-0.0862	0.1894	+
LABOUR	2.7862	0.0951	-0.1990	-0.2180	0.0191	-0.1153	-0.1514	0.0361	
NTC	1.5177	0.2180	85.3508	87.4057	-2.0549	61.5664	63.4725	-1.9061	
QFORECAST_12	0.5323	0.4656	2.5038	2.2714	0.2324	1.6000	1.3750	0.2250	
REVISION_12	2.4322	0.1189	-0.0778	0.0078	-0.0856	-0.0685	-0.0413	-0.0272	
REVISION_24	0.0414	0.8388	-0.0593	-0.0051	-0.0542	-0.0518	-0.0373	-0.0145	
REVISION_36	0.0082	0.9370	-0.0776	-0.1262	0.0486	-0.1883	-0.1816	-0.0066	
RSTRENGTH_ALSI	0.8123	0.3674	0.4599	0.4397	0.0202	0.4348	0.4048	0.0300	
RSTRENGTH_SUB	1.9388	0.1638	0.4662	0.4463	0.0199	0.4405	0.4186	0.0219	
CH_RSTRENGTH_ALSI	0.0325	0.8569	0.0803	0.0458	0.0144	0.0488	0.0397	0.0089	
CH_RSTRENGTH_SUB	0.0903	0.7638	0.0617	0.0392	0.0225	0.0318	0.0395	-0.0077	
WRSTRENGTH_ALSI	6.0690	0.0138	0.4708	0.4384	0.0324	0.4589	0.3981	0.0608	+
WRSTRENGTH_SUB	3.4696	0.0625	0.4741	0.4441	0.0300	0.4648	0.4057	0.0589	
POS_SALES	1.0926	0.2958	11.0274	10.2898	0.7375	8.0000	7.0000	1.0000	
POS_PRETAX	2.0273	0.1545	13.3354	11.8200	1.5154	10.0000	9.0000	1.0000	
POS_OP	1.2545	0.2627	12.8625	11.8396	0.8229	9.0000	9.0000	0.0000	
POS_NET	6.4244	0.0113	14.0515	12.6283	1.4232	10.0000	9.0000	1.0000	+
POS_ROE	0.0001	0.9938	10.8224	9.8647	0.9577	7.0000	6.0000	1.0000	

Appendix C.13. Significant Loser Evolution Signals: 12 Months

The table shows the results from the Chi-squared median test along with numerous other statistics. For the median test, the T-statistic indicating the difference between loser distributions at the start and twelve months before the start of extreme performance is shown for each variable. The highlighted cells indicate those variables which are significantly different between these shares at the 5% significance level.

In addition, the means, medians and differences between these two measures in the two portfolios are shown for each variable. The "Summary" column combines this information and indicates whether the medians of the relevant variables are larger (+), smaller (–) or not significantly different (blank) in loser shares at the start of extreme performance as compared to the same shares twelve months before the start of extreme performance. If a significant difference is found by the median test but there is no difference in sample medians the difference is assumed not to be significant enough for the purposes of this study and the "Summary" column is left blank.

Variable	Median Test		Mean			Median			Summary
	Period 0 ≠ Period -12								
	T	Ha: diff != 0	Period 0	Period -12	Difference	Period 0	Period -12	Difference	
INST_OWN	0.0847	0.7711	0.0076	0.0033	0.0043	0.0000	0.0000	0.0000	
MAN_OWN	2.3121	0.1284	0.5189	0.3383	0.1806	0.5700	0.2400	0.3300	
PE	0.3338	0.5634	16.1412	22.1770	-6.0359	11.8000	12.0000	-0.2000	
EY	0.0214	0.8838	0.0990	0.1103	-0.0113	0.0794	0.0800	-0.0006	
MV	0.8707	0.3506	3477.8727	3348.8702	128.8025	636.6700	753.6450	-114.9750	
LN_MV	0.9220	0.3370	6.6344	6.6649	-0.0305	6.4594	6.6248	-0.1654	
BETA	0.0000	0.9975	0.5588	0.5582	0.0006	0.5320	0.5320	0.0000	
MTB	0.0280	0.8671	2.8484	2.8861	-0.0378	1.7330	1.8700	0.0600	
VOL_3	1.9827	0.1591	2.6830	2.4771	0.2058	0.6900	0.7977	-0.1077	
LN_VOL_3	1.8945	0.1687	-0.4056	-0.3526	-0.0530	-0.3708	-0.2260	-0.1448	
VOL_6	3.6732	0.0553	1.9830	1.7898	0.1932	0.5414	0.6868	-0.1453	
LN_VOL_6	3.5534	0.0594	-0.6442	-0.5349	-0.1093	-0.6129	-0.3758	-0.2371	
VOL_12	2.8502	0.0914	1.7240	1.6163	0.1077	0.5055	0.5913	-0.0858	
LN_VOL_12	2.8502	0.0914	-0.7421	-0.6317	-0.1104	-0.6822	-0.5254	-0.1568	
VOL_18	0.7659	0.3815	1.8594	1.4612	0.1982	0.5574	0.5939	-0.0365	
LN_VOL_18	0.8264	0.3633	-0.7120	-0.6705	-0.0415	-0.5844	-0.5203	-0.0641	
VOL_24	0.3786	0.5384	1.8075	1.4564	0.1511	0.5722	0.6187	-0.0466	
LN_VOL_24	0.4216	0.5161	-0.7060	-0.6762	-0.0298	-0.5583	-0.4767	-0.0816	
SDEV_VOL	0.9712	0.3244	2.1109	1.6599	0.4510	0.4990	0.6008	-0.1019	
LN_SDEV_VOL	0.8480	0.3571	-0.6218	-0.6294	0.0076	-0.6928	-0.4997	-0.1931	
VOLINOSHARES	0.2326	0.6296	0.0016	0.0013	0.0003	0.0004	0.0005	0.0000	
LN_VOLINOSHARES	0.3746	0.5405	-7.8811	-7.8967	0.0155	-7.7491	-7.7051	-0.0440	
AGE	6.1640	0.0130	8.7273	7.7194	1.0079	7.4778	6.4782	0.9996	+
MOM_1	0.1346	0.7137	0.0052	0.0065	-0.0034	0.0000	0.0013	-0.0013	
MOM_3	0.9494	0.3299	0.0304	0.0289	0.0015	0.0272	0.0109	0.0163	
MOM_6	5.2602	0.0218	0.0692	0.0209	0.0483	0.0246	-0.0058	0.0304	+
MOM_12	0.0225	0.8806	0.1045	0.1052	-0.0007	0.0087	0.0163	-0.0077	
MOM_18	2.5288	0.1118	0.1612	0.2414	-0.0802	-0.0073	0.0481	-0.0554	
MOM_24	5.0562	0.0245	0.2879	0.4999	-0.2120	0.0362	0.1430	-0.1068	-
NOSHARES	1.0583	0.3036	187946.4792	173118.7551	14827.7241	117234.0000	93319.0000	23915.0000	
LN_NOSHARES	1.0583	0.3036	11.6389	11.5340	0.1049	11.6719	11.4438	0.2282	
MAXP_12	3.4179	0.0645	0.7731	0.7476	0.0255	0.8000	0.7667	0.0333	
MAXP_24	0.9895	0.3199	0.6745	0.6825	-0.0079	0.7217	0.6996	0.0221	
MAXP_60	0.9895	0.3199	0.6016	0.6316	-0.0301	0.6552	0.6250	0.0302	
EARN	0.0401	0.8411	177121.3374	143261.9147	33859.4228	55756.0000	55052.0000	704.0000	
EARNG_3	5.1884	0.0227	0.0032	0.0032	0.0000	0.0000	0.0000	0.0000	
EARNG_6	10.5843	0.0011	0.0060	0.0061	0.0019	0.0000	0.0000	0.0000	
EARNG_12	21.6868	0.0000	0.0317	0.0155	0.0161	0.0142	0.0073	0.0069	+
EARNG_24	0.3785	0.5385	0.0534	0.0552	-0.0018	0.0232	0.0248	-0.0016	
EARNG_60	1.9899	0.1583	0.1814	0.1804	-0.0190	0.1179	0.1310	-0.0132	
EPS	0.8302	0.4273	1.5792	1.3078	0.2718	0.4000	0.4000	0.0000	
LN_EPS	0.9798	0.3225	-0.3372	-0.4935	0.1564	-0.5110	-0.6733	0.1624	
ROE	8.5157	0.0035	0.3709	0.1961	0.1748	0.2107	0.1768	0.0339	+
PRETAX_PM	0.2309	0.6309	0.0931	0.1014	-0.0082	0.0914	0.0894	0.0020	
ACCITA	16.2342	0.0001	-0.0301	-0.0049	-0.0252	-0.0216	-0.0003	-0.0213	-
CH_CF	0.0022	0.9627	0.5459	0.2997	0.2462	0.1202	0.1053	0.0149	
CH_ARISALES	7.9359	0.0048	0.2125	0.4085	-0.1960	0.2263	0.1697	0.0566	+
CH_ASSTURN	6.7988	0.0091	0.0526	0.0771	-0.0245	-0.0087	0.0498	-0.0585	-
CH_CURRENT	0.0096	0.9218	0.0452	0.0187	0.0265	0.0032	0.0000	0.0032	
CH_QUICK	0.0000	0.9955	0.0466	-0.0013	0.0481	-0.0385	-0.0385	0.0000	
CH_INVTURN	0.8315	0.3618	0.9259	-0.8115	1.7374	0.0617	0.0000	0.0617	
INVITA	6.8491	0.0089	0.1533	0.1802	-0.0269	0.1361	0.1681	-0.0321	-
CH_INVITA	0.0014	0.9705	0.0087	0.0078	0.0010	0.0000	0.0000	0.0000	
CH_INV	1.0332	0.3094	0.8698	0.3913	0.4785	0.2658	0.1780	0.0877	
CH_SALES	3.3522	0.0671	0.3287	0.2293	0.0994	0.1217	0.1513	-0.0296	
CH_DEP	17.8610	0.0000	0.7289	0.3641	0.3648	0.2508	0.1325	0.1183	+
CH_DPS	12.7725	0.0004	0.0239	0.1401	-0.1162	0.0476	0.1667	-0.1190	-
CH_ROE	0.7011	0.4024	0.0683	-0.0271	0.0953	-0.0002	-0.0051	0.0050	
CAPGEAR	0.2048	0.6508	0.2057	0.1754	0.0303	0.1902	0.2104	-0.0202	
CH_CAPGEAR	5.6020	0.0179	0.4779	0.3959	0.0819	0.0135	-0.0321	0.0456	+
ROA	2.4313	0.1189	0.0715	0.0642	0.0073	0.0666	0.0737	-0.0071	
GM	0.3629	0.5469	0.2216	0.2140	0.0076	0.1522	0.1201	0.0320	
CH_EBTISALES	0.1011	0.7505	0.3024	0.2013	0.1011	-0.0111	-0.0119	0.0008	
SALESICASH	7.8024	0.0052	25.5793	33.1278	-7.5485	7.2024	8.5499	-1.3475	-
LN_SALESICASH	8.1483	0.0043	2.1793	2.4181	-0.2388	2.0306	2.1925	-0.1617	-
CH_TA	10.0126	0.0016	0.3334	0.1914	0.1420	0.1751	0.1309	0.0443	+
CASHIDEBT	0.7807	0.3769	2.8698	2.3207	0.5491	0.0638	0.0337	0.0301	
WCITA	9.4391	0.0021	0.8229	0.5957	0.0272	0.7183	0.6438	0.0745	+
OPINCITA	0.2587	0.6124	0.0998	0.1012	-0.0014	0.0934	0.1062	-0.0128	
DIVICF	6.5904	0.0103	-1.0428	-1.7350	0.6924	0.0000	0.0000	0.0000	
DY	0.8808	0.3481	0.0335	0.0369	-0.0034	0.0203	0.0244	-0.0041	
CH_INVISALES	0.0299	0.8628	0.2308	0.1805	0.0504	-0.0177	0.0000	-0.0177	
CH_ARISALES	15.3044	0.0001	0.0742	-0.0026	0.0768	0.0124	-0.0868	0.0993	+
CH_SALESIGM	0.5239	0.4892	0.0126	-0.2969	0.3095	0.0000	0.0000	0.0000	
CH_SAISALES	21.1665	0.0000	0.0672	-0.3211	0.3884	0.0632	-0.1855	0.2687	+
LABOUR	2.4061	0.1209	-0.1990	-0.1983	-0.0007	-0.1153	-0.1514	0.0361	
NTC	1.7247	0.1891	85.3508	89.8141	-4.4633	61.5864	64.4337	-2.8473	
GFORECAST_12	0.1955	0.6583	2.5038	2.2658	0.2380	1.6000	1.4150	0.1850	
REVISION_12	5.0581	0.0245	-0.0778	0.0304	-0.1082	-0.0685	-0.0247	-0.0438	-
REVISION_24	1.9399	0.1637	-0.0593	0.0360	-0.0953	-0.0518	-0.0150	-0.0368	
REVISION_36	0.1674	0.6825	-0.0776	-0.1061	0.0305	-0.1883	-0.1500	-0.0383	
RSTRENGTH_ALSI	0.0921	0.7615	0.4599	0.4528	0.0071	0.4348	0.4270	0.0078	
RSTRENGTH_SUB	0.1805	0.6709	0.4662	0.4584	0.0078	0.4405	0.4329	0.0076	
CH_RSTRENGTH_ALSI	0.6226	0.4301	0.0603	0.0546	0.0057	0.0486	0.0289	0.0197	
CH_RSTRENGTH_SUB	0.0332	0.8555	0.0617	0.0439	0.0178	0.0318	0.0268	0.0051	
WRSTRENGTH_ALSI	2.6857	0.1013	0.4708	0.4488	0.0220	0.4589	0.4167	0.0423	
WRSTRENGTH_SUB	1.3299	0.2488	0.4741	0.4531	0.0210	0.4648	0.4234	0.0411	
POS_SALES	5.8155	0.0159	11.0274	10.1696	0.8578	8.0000	6.0000	2.0000	+
POS_PRETAX	4.5877	0.0308	13.3364	11.4656	1.8708	10.0000	9.0000	1.0000	+
POS_OP	2.1554	0.1423	12.6825	11.4805	1.1821	9.0000	9.0000	0.0000	
POS_NET	9.2632	0.0023	14.0515	12.1227	1.9288	10.0000	9.0000	1.0000	+
POS_ROE	0.0133	0.9080	10.8224	9.4201	1.2024	7.0000	7.0000	0.0000	

Appendix D

This appendix refers to Chapter 6: Derivation of Winner Filter Rules

Appendix D.1. Decile values for signal variables

The table shows the eleven decile cutoff points for each of the signal variables found to be significant in Chapter 6.

	Min	1	2	3	4	5	6	7	8	9	Max
MTB	-5.9192	0.5700	0.8000	1.0100	1.2100	1.4600	1.7800	2.2300	2.9200	4.2300	10.1544
NOSHARES	1035	23230	37371	58308	90283	108105	155828	214309	280140	408049	1126408
SDEV_VOL	0.0000	0.0546	0.1378	0.2415	0.3652	0.5354	0.7921	1.2043	1.8879	3.6139	28.9845
OPINCITA	-0.1979	0.0053	0.0355	0.0608	0.0804	0.1026	0.1237	0.1440	0.1702	0.2148	0.4061
PRETAX_PM	-1.3436	0.0038	0.0309	0.0539	0.0698	0.0844	0.1063	0.1400	0.1771	0.2984	1.4931
SALESICASH	0.0000	2.0758	4.0044	5.7656	7.6202	10.0307	13.8408	20.3189	31.1798	79.7744	1387.1499
CAPGEAR	0.0000	0.0000	0.0173	0.0603	0.1329	0.1880	0.2309	0.2853	0.3656	0.4624	0.8076
CH_DEP	-1.0000	-0.1773	-0.0330	0.0303	0.0926	0.1510	0.2195	0.3159	0.5306	0.9350	7.7765
CH_INVTTA	-0.1271	-0.0438	-0.0208	-0.0089	-0.0026	0.0000	0.0025	0.0093	0.0196	0.0406	0.1264
GFORECAST_12	-0.1400	0.3150	0.5400	0.8700	1.1750	1.5800	2.2000	3.2600	4.6600	7.6500	17.9649
ROE	-2.9886	-0.0159	0.0781	0.1275	0.1592	0.1898	0.2299	0.2821	0.3313	0.4784	3.5237
CH_TA	-0.7814	-0.1317	-0.0173	0.0284	0.0718	0.1128	0.1616	0.2202	0.3306	0.5709	1.6504
ROA	-0.2436	0.0010	0.0173	0.0414	0.0583	0.0735	0.0888	0.1036	0.1221	0.1577	0.3785
CH_QUICK	-0.9154	-0.3571	-0.1818	-0.1167	-0.0465	0.0000	0.0469	0.1126	0.2093	0.3913	1.2430
EARNG_60	-1.5589	-0.0562	0.0008	0.0350	0.0660	0.0989	0.1346	0.1894	0.2910	0.4709	1.8960
ACCITA	-0.4624	-0.1870	-0.1048	-0.0629	-0.0391	-0.0163	0.0000	0.0191	0.0490	0.1229	0.4111
CH_ARISALES	-2.6958	-0.4455	-0.2406	-0.1454	-0.0910	-0.0283	0.0225	0.0918	0.1793	0.3757	2.7259
REVISION_24	-1.2977	-0.4235	-0.2823	-0.1683	-0.1148	-0.0516	0.0000	0.0458	0.1328	0.3079	1.2343
REVISION_12	-1.9130	-0.4760	-0.2949	-0.1923	-0.1380	-0.0777	-0.0221	0.0287	0.0976	0.2610	1.7788
EARNG_12	-1.5103	-0.1256	-0.0342	-0.0019	0.0083	0.0151	0.0264	0.0442	0.0724	0.1391	1.5473
GM	-0.4284	0.0501	0.0802	0.1083	0.1431	0.1906	0.2423	0.2964	0.3648	0.4939	0.9053
CH_ASSTURN	-0.9404	-0.2118	-0.1185	-0.0552	-0.0180	0.0116	0.0509	0.0939	0.1707	0.3249	1.2401
DY	0.0000	0.0000	0.0000	0.0079	0.0182	0.0252	0.0333	0.0422	0.0539	0.0735	0.1356
NTC	-191.6520	5.3136	26.9339	42.4337	52.2665	62.1739	76.7327	97.1958	131.9211	169.3887	355.2986
POS_OP	1.0000	2.0000	4.0000	7.0000	9.0000	11.0000	13.0000	16.0000	20.0000	32.0000	46.3154
POS_NET	1.0000	3.0000	5.0000	7.0000	9.0000	11.0000	13.0000	16.0000	21.0000	32.0000	47.3904
POS_ROE	1.0000	2.0000	4.0000	6.0000	8.0000	9.0000	12.0000	15.0000	21.0000	32.0000	46.8095
MOM_6(-3m)	-0.9534	-0.3249	-0.1835	-0.0848	-0.0041	0.0627	0.1394	0.2288	0.3500	0.5769	1.3487
MOM_3(-6m)	-0.7390	-0.2447	-0.1377	-0.0687	-0.0148	0.0321	0.0823	0.1375	0.2179	0.3592	0.8542
MOM_6(-6m)	-0.9534	-0.3274	-0.1857	-0.0873	-0.0061	0.0613	0.1383	0.2287	0.3524	0.5835	1.3487
SDEV_VOL(-6m)	0.0000	0.0543	0.1356	0.2400	0.3615	0.5352	0.7885	1.2072	1.8865	3.6082	28.9845
CH_ASSTURN(-6m)	-0.9404	-0.1961	-0.1130	-0.0476	-0.0108	0.0155	0.0547	0.1038	0.1797	0.3441	1.2401
CH_INVTURN(-6m)	-258.6350	-3.7510	-1.2846	-0.5201	-0.0967	0.2379	0.6231	1.1320	2.1842	5.0482	264.9383
CH_TA(-6m)	-0.7653	-0.1284	-0.0094	0.0322	0.0735	0.1163	0.1633	0.2221	0.3320	0.5709	1.6504
EY(-9m)	-0.3866	0.0191	0.0429	0.0599	0.0763	0.0935	0.1136	0.1370	0.1695	0.2222	0.5878
SDEV_VOL(-9m)	0.0000	0.0541	0.1355	0.2396	0.3610	0.5362	0.7913	1.2090	1.9002	3.6324	28.9845
MOM_3(-9m)	-0.7390	-0.2464	-0.1386	-0.0694	-0.0149	0.0332	0.0841	0.1404	0.2217	0.3627	0.8542
EARNG_24(-9m)	-1.6970	-0.1204	-0.0310	0.0000	0.0188	0.0343	0.0541	0.0821	0.1288	0.2325	1.8135
DY(-9m)	0.0000	0.0000	0.0000	0.0069	0.0176	0.0249	0.0333	0.0424	0.0545	0.0756	0.1356
CH_TA(-9m)	-0.7653	-0.1250	-0.0085	0.0364	0.0760	0.1182	0.1662	0.2252	0.3388	0.5709	1.6504
CH_SALES(-9m)	-0.8446	-0.0713	0.0046	0.0630	0.1077	0.1465	0.2067	0.2694	0.3786	0.6391	1.6768
CH_DPS(-9m)	-1.0000	-0.4483	-0.0920	0.0000	0.0769	0.1471	0.2043	0.2500	0.3750	0.6667	1.8520
ROE(-9m)	-2.9886	-0.0070	0.0782	0.1275	0.1589	0.1886	0.2264	0.2820	0.3332	0.4967	3.5237
CH_INVISALES(-9m)	-6.6923	-0.4496	-0.2339	-0.1518	-0.0887	-0.0323	0.0146	0.0881	0.1898	0.4523	6.9996
EY(-12m)	-0.3866	0.0191	0.0427	0.0595	0.0758	0.0926	0.1136	0.1389	0.1724	0.2222	0.5878
SDEV_VOL(-12m)	0.0000	0.0533	0.1348	0.2370	0.3601	0.5342	0.7880	1.2055	1.9059	3.6742	28.9845
EARNG_24(-12m)	-1.6970	-0.1191	-0.0301	-0.0001	0.0186	0.0336	0.0533	0.0797	0.1253	0.2297	1.8135
CH_ASSTURN(-12m)	-0.9116	-0.1939	-0.1126	-0.0501	-0.0105	0.0155	0.0583	0.1074	0.1855	0.3496	1.2401
CH_DPS(-12m)	-1.0000	-0.4464	-0.0920	0.0000	0.0769	0.1455	0.2051	0.2500	0.3621	0.6594	1.8520
ROE(-12m)	-2.9886	-0.0007	0.0783	0.1275	0.1589	0.1876	0.2263	0.2820	0.3332	0.4969	3.5237
CH_INVTURN(-12m)	-258.6350	-3.4867	-1.2866	-0.5361	-0.1263	0.2201	0.6142	1.0974	2.1842	5.0268	264.9383
CH_SALES(-12m)	-0.8446	-0.0705	0.0104	0.0656	0.1089	0.1512	0.2093	0.2746	0.3809	0.6507	1.6768
OPINCITA(-12m)	-0.1979	0.0062	0.0369	0.0613	0.0799	0.1007	0.1212	0.1411	0.1691	0.2113	0.4061
CH_TA(-12m)	-0.7653	-0.1201	-0.0038	0.0382	0.0805	0.1243	0.1694	0.2278	0.3423	0.5868	1.6504
DY(-12m)	0.0000	0.0000	0.0000	0.0065	0.0174	0.0246	0.0333	0.0425	0.0550	0.0763	0.1356
CH_EBTISALES(-12m)	-11.5277	-0.8996	-0.4396	-0.2146	-0.1048	-0.0397	0.0347	0.1106	0.3236	0.9065	11.8414
ROA(-12m)	-0.2436	0.0026	0.0179	0.0414	0.0580	0.0726	0.0872	0.1018	0.1209	0.1546	0.3785
CH_DEP(-12m)	-1.0000	-0.1486	-0.0225	0.0488	0.1153	0.1748	0.2322	0.3606	0.5610	0.9977	7.7765
GM(-12m)	-0.4284	0.0477	0.0764	0.1082	0.1394	0.1833	0.2302	0.2839	0.3613	0.4678	0.9053
CH_INVTTA(-12m)	-0.1271	-0.0421	-0.0202	-0.0080	-0.0023	0.0000	0.0033	0.0111	0.0228	0.0435	0.1264
POS_NET(-12m)	1.0000	3.0000	5.0000	7.0000	8.0000	11.0000	13.0000	16.0000	21.0000	32.0000	47.3904
POS_OP(-12m)	1.0000	2.0000	4.0000	6.0000	8.0000	10.0000	13.0000	16.0000	20.0000	31.0000	46.3154

Appendix D.2. Relative median values for signal variables: winners

The table below shows each of the eleven proposed filter levels for each variable in terms of the relative median technique for the winner tests. This technique considers the medians of each of the variables for the winner portfolio. It then takes the difference between these medians and the medians of the non-winner portfolios (D). The values in the table are calculated as five points on either side of the winner median, each (2 × D / 5) further away from this midpoint. The median values for the winner portfolio are indicated in bold.

	1	2	3	4	5	6	7	8	9	10	11
MTB	-1.3300	-0.8300	-0.3300	0.1700	0.6700	**1.1700**	1.6700	2.1700	2.6700	3.1700	3.6700
NOSHARES	16728	32894	49060	65226	81392	**97558**	113724	129890	146056	162222	178388
SDEV_VOL	-0.4409	-0.2246	-0.0082	0.2081	0.4244	**0.6407**	0.8570	1.0733	1.2896	1.5059	1.7222
OPINCtTA	-0.1290	-0.0873	-0.0455	-0.0037	0.0380	**0.0798**	0.1216	0.1633	0.2051	0.2469	0.2886
PRETAX_PM	-0.1054	-0.0706	-0.0358	-0.0010	0.0338	**0.0686**	0.1034	0.1382	0.1730	0.2078	0.2426
SALEStCASH	-28.0377	-19.6718	-11.3060	-2.9401	5.4257	**13.7916**	22.1574	30.5233	38.8891	47.2550	55.6209
CAPGEAR	-0.2875	-0.1827	-0.0779	0.0269	0.1317	**0.2365**	0.3413	0.4461	0.5509	0.6557	0.7605
CH_DEP	-0.5783	-0.4407	-0.3030	-0.1654	-0.0277	**0.1099**	0.2475	0.3852	0.5228	0.6605	0.7981
CH_INVtTA	-0.0250	-0.0194	-0.0139	-0.0083	-0.0028	**0.0028**	0.0083	0.0139	0.0194	0.0250	0.0305
GFORECAST_12	-2.6850	-1.8950	-1.1050	-0.3150	0.4750	**1.2650**	2.0550	2.8450	3.6350	4.4250	5.2150
ROE	-0.0468	-0.0036	0.0396	0.0828	0.1260	**0.1692**	0.2124	0.2556	0.2988	0.3420	0.3852
CH_TA	-0.1842	-0.1280	-0.0718	-0.0156	0.0406	**0.0968**	0.1530	0.2092	0.2654	0.3215	0.3777
ROA	-0.0012	0.0122	0.0256	0.0391	0.0525	**0.0659**	0.0794	0.0928	0.1062	0.1197	0.1331
CH_QUICK	-0.1209	-0.0989	-0.0769	-0.0549	-0.0330	**-0.0110**	0.0110	0.0330	0.0549	0.0769	0.0989
EARNG_60	-0.1533	-0.1086	-0.0638	-0.0190	0.0258	**0.0705**	0.1153	0.1601	0.2049	0.2497	0.2944
ACCtTA	-0.1416	-0.1186	-0.0956	-0.0726	-0.0496	**-0.0266**	-0.0036	0.0194	0.0424	0.0654	0.0884
CH_ARISALES	-0.4379	-0.3622	-0.2864	-0.2107	-0.1350	**-0.0592**	0.0165	0.0922	0.1680	0.2437	0.3194
REVISION_24	-0.6459	-0.5384	-0.4309	-0.3235	-0.2160	**-0.1085**	-0.0011	0.1064	0.2139	0.3213	0.4288
REVISION_12	-0.4258	-0.3628	-0.2998	-0.2368	-0.1737	**-0.1107**	-0.0477	0.0153	0.0784	0.1414	0.2044
EARNG_12	-0.0153	-0.0086	-0.0020	0.0047	0.0114	**0.0181**	0.0248	0.0315	0.0381	0.0448	0.0515
GM	-0.0822	-0.0227	0.0367	0.0961	0.1556	**0.2150**	0.2745	0.3339	0.3933	0.4528	0.5122
CH_ASSTURN	-0.1652	-0.1254	-0.0857	-0.0459	-0.0061	**0.0337**	0.0735	0.1132	0.1530	0.1928	0.2326
DY	-0.0013	0.0036	0.0084	0.0132	0.0180	**0.0229**	0.0277	0.0325	0.0373	0.0422	0.0470
NTC	12.7478	24.0407	35.3337	46.6266	57.9195	**69.2124**	80.5054	91.7983	103.0912	114.3842	125.6771
POS_OP	-8.0000	-4.0000	0.0000	4.0000	8.0000	**12.0000**	16.0000	20.0000	24.0000	28.0000	32.0000
POS_NET	2.0000	4.0000	6.0000	8.0000	10.0000	**12.0000**	14.0000	16.0000	18.0000	20.0000	22.0000
POS_ROE	-9.0000	-5.0000	-1.0000	3.0000	7.0000	**11.0000**	15.0000	19.0000	23.0000	27.0000	31.0000
MOM_6(-3m)	-0.1964	-0.1438	-0.0912	-0.0386	0.0140	**0.0666**	0.1192	0.1718	0.2244	0.2770	0.3296
MOM_3(-6m)	-0.2988	-0.2313	-0.1638	-0.0962	-0.0287	**0.0388**	0.1064	0.1739	0.2414	0.3090	0.3765
MOM_6(-6m)	-0.3419	-0.2602	-0.1785	-0.0968	-0.0151	**0.0666**	0.1483	0.2300	0.3117	0.3934	0.4751
SDEV_VOL(-6m)	-0.9470	-0.6294	-0.3119	0.0056	0.3231	**0.6407**	0.9582	1.2757	1.5933	1.9108	2.2283
CH_ASSTURN(-6m)	-0.2930	-0.2276	-0.1623	-0.0970	-0.0316	**0.0337**	0.0990	0.1643	0.2297	0.2950	0.3603
CH_INVTURN(-6m)	-2.3977	-1.8448	-1.2918	-0.7389	-0.1859	**0.3670**	0.9200	1.4729	2.0259	2.5788	3.1318
CH_TA(-6m)	-0.1678	-0.1149	-0.0620	-0.0091	0.0439	**0.0968**	0.1497	0.2026	0.2556	0.3085	0.3614
EY(-9m)	0.0034	0.0221	0.0409	0.0596	0.0784	**0.0971**	0.1158	0.1346	0.1533	0.1720	0.1908
SDEV_VOL(-9m)	-1.4093	-0.9993	-0.5893	-0.1793	0.2307	**0.6407**	1.0507	1.4607	1.8706	2.2806	2.6906
MOM_3(-9m)	-0.2761	-0.2131	-0.1501	-0.0872	-0.0242	**0.0388**	0.1018	0.1648	0.2278	0.2908	0.3538
EARNG_24(-9m)	-0.1156	-0.0858	-0.0560	-0.0263	0.0035	**0.0333**	0.0630	0.0928	0.1226	0.1524	0.1821
DY(-9m)	-0.0122	-0.0052	0.0018	0.0089	0.0159	**0.0229**	0.0299	0.0369	0.0439	0.0509	0.0579
CH_TA(-9m)	-0.2519	-0.1822	-0.1124	-0.0427	0.0270	**0.0968**	0.1665	0.2363	0.3060	0.3757	0.4455
CH_SALES(-9m)	-0.2144	-0.1429	-0.0714	0.0001	0.0716	**0.1431**	0.2147	0.2862	0.3577	0.4292	0.5007
CH_DPS(-9m)	-0.4286	-0.3095	-0.1905	-0.0714	0.0476	**0.1667**	0.2857	0.4048	0.5238	0.6429	0.7619
ROE(-9m)	-0.0748	-0.0260	0.0228	0.0716	0.1204	**0.1692**	0.2180	0.2668	0.3156	0.3644	0.4132
CH_INVISALES(-9m)	-0.3886	-0.3195	-0.2505	-0.1814	-0.1123	**-0.0433**	0.0258	0.0949	0.1639	0.2330	0.3021
EY(-12m)	-0.0335	-0.0073	0.0188	0.0449	0.0710	**0.0971**	0.1232	0.1493	0.1754	0.2015	0.2276
SDEV_VOL(-12m)	-1.2656	-0.8843	-0.5031	-0.1218	0.2594	**0.6407**	1.0219	1.4032	1.7844	2.1657	2.5469
EARNG_24(-12m)	-0.1674	-0.1272	-0.0871	-0.0470	-0.0069	**0.0333**	0.0734	0.1135	0.1537	0.1938	0.2339
CH_ASSTURN(-12m)	-0.3121	-0.2429	-0.1738	-0.1046	-0.0355	**0.0337**	0.1028	0.1720	0.2411	0.3103	0.3794
CH_DPS(-12m)	-0.5693	-0.4221	-0.2749	-0.1277	0.0195	**0.1667**	0.3139	0.4610	0.6082	0.7554	0.9026
ROE(-12m)	-0.1618	-0.0956	-0.0294	0.0368	0.1030	**0.1692**	0.2354	0.3016	0.3678	0.4340	0.5002
CH_INVTURN(-12m)	-2.3977	-1.8448	-1.2918	-0.7389	-0.1859	**0.3670**	0.9200	1.4729	2.0259	2.5788	3.1318
CH_SALES(-12m)	-0.2144	-0.1429	-0.0714	0.0001	0.0716	**0.1431**	0.2147	0.2862	0.3577	0.4292	0.5007
OPINCtTA(-12m)	-0.0778	-0.0463	-0.0148	0.0168	0.0483	**0.0798**	0.1113	0.1428	0.1744	0.2059	0.2374
CH_TA(-12m)	-0.1760	-0.1214	-0.0669	-0.0123	0.0422	**0.0968**	0.1513	0.2059	0.2605	0.3150	0.3696
DY(-12m)	-0.0079	-0.0017	0.0044	0.0106	0.0167	**0.0229**	0.0290	0.0351	0.0413	0.0474	0.0536
CH_EBTtSALES(-12m)	-0.7558	-0.6120	-0.4683	-0.3246	-0.1808	**-0.0371**	0.1066	0.2504	0.3941	0.5378	0.6815
ROA(-12m)	-0.1173	-0.0807	-0.0440	-0.0074	0.0293	**0.0659**	0.1026	0.1392	0.1759	0.2125	0.2492
CH_DEP(-12m)	-0.2194	-0.1536	-0.0877	-0.0218	0.0440	**0.1099**	0.1758	0.2416	0.3075	0.3734	0.4392
GM(-12m)	-0.0822	-0.0227	0.0367	0.0961	0.1556	**0.2150**	0.2745	0.3339	0.3933	0.4528	0.5122
CH_INVtTA(-12m)	-0.0248	-0.0192	-0.0137	-0.0082	-0.0027	**0.0028**	0.0083	0.0138	0.0193	0.0248	0.0303
POS_NET(-12m)	-8.0000	-4.0000	0.0000	4.0000	8.0000	**12.0000**	16.0000	20.0000	24.0000	28.0000	32.0000
POS_OP(-12m)	-8.0000	-4.0000	0.0000	4.0000	8.0000	**12.0000**	16.0000	20.0000	24.0000	28.0000	32.0000

Appendix D.3. Results for decile filter and relative median filter techniques

The tables below show the results from the stepwise median comparison test when filters are derived on the basis of deciles (Panel A) and relative medians between winner and non-winner portfolios (Panel B). The test is run using a comparison level of 40 percent. Each row of the tables represents the addition of an extra filter. The tables show the z-statistics of the Wilcoxon sign ranked test comparing the filtered portfolios' medians to 40 percent. The tables also show the average number of companies held in any month over the period from 1995 until 2004, and the amount of companies held as a proportion of the entire sample. The number of winners picked out of a possible 1104 insample winners is indicated. The tables also show the average annual return and annualized standard deviation of monthly portfolio returns[14] of each filtered portfolio over the period from January 1995 until December 2004. Finally, the Sharpe ratio and JK statistic for each consecutive filter is shown.

Panel A: Results with decile filters

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.4	1	4.0637	0.0000	POS_NET	≥	47.3904	0.53	0.50%	21	109.55%	274.15%	0.1576	0.3613
0.4	2	4.2845	0.0000	MOM_6(-3m)	≥	-0.1835	0.51	0.48%	20	118.55%	276.39%	0.1788	0.3906
0.4	3	4.1712	0.0000	MOM_6(-6m)	≥	-0.9534	0.51	0.48%	19	117.83%	275.65%	0.1748	0.3889
0.4	4	4.1605	0.0000	MOM_3(-9m)	≥	-0.2464	0.51	0.48%	17	124.70%	276.39%	0.1917	0.4130
0.4	5	3.856	0.0001	MOM_3(-6m)	≥	-0.2447	0.49	0.46%	14	119.70%	267.62%	0.1855	0.4084
0.4	6	3.5653	0.0002	CH_DEP	≤	0.0926	0.40	0.37%	11	127.39%	91.41%	1.7737	1.2873
0.4	7	3.1717	0.0008	POS_ROE	≥	46.8095	0.37	0.34%	8	127.17%	108.34%	1.2397	1.0863
0.4	8	2.925	0.0017	CH_INVTURN(-6m)	≥	-3.7510	0.34	0.32%	7	129.76%	125.04%	0.9550	0.9620
0.4	9	2.4463	0.0072	NOSHARES	≤	108105	0.21	0.19%	7	156.28%	172.20%	0.7199	0.8489
0.4	10	1.9439	0.0260	EARNG_12	≥	0.0151	0.21	0.19%	5	159.80%	172.20%	0.7420	0.8692
0.4	11	0.9129	0.1807	CH_INVtTA	≥	0.0093	0.18	0.17%	2	102.26%	182.26%	0.2675	0.4984
0.4	12	0.2673	0.3947	PRETAX_PM	≤	-1.3436	0.13	0.12%	1	88.10%	210.31%	0.1471	0.3606

Panel B: Results with relative median filters

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.4	1	3.9798	0.00005	MTB	≤	0.6700	20.28	18.95%	242	53.41%	70.05%	0.6264	0.5901
0.4	2	8.9244	0.00000	CH_TA(-6m)	≤	0.2026	12.39	11.58%	157	67.48%	77.79%	0.7656	0.7185
0.4	3	10.677	0.00000	CH_ASSTURN	≥	-0.0459	9.17	8.57%	114	73.12%	31.37%	5.3656	1.9747
0.4	4	11.448	0.00000	CH_INVtTA(-12m)	≥	-0.0248	7.36	6.88%	99	80.09%	34.37%	5.2416	2.0019
0.4	5	11.656	0.00000	CH_ASSTURN(-6m)	≥	-0.0970	6.61	6.18%	86	79.39%	35.07%	4.8615	1.9444
0.4	6	11.872	0.00000	CH_TA(-12m)	≤	0.2605	6.05	5.65%	82	80.80%	35.10%	4.9443	1.9823
0.4	7	11.841	0.00000	CH_TA	≤	0.3777	5.94	5.55%	82	81.00%	35.31%	4.8393	1.9764
0.4	8	11.8	0.00000	OPINCtTA	≤	0.2886	5.93	5.55%	81	80.88%	35.29%	4.7606	1.9742
0.4	9	11.759	0.00000	ACCtTA	≤	0.0654	5.83	5.45%	80	80.73%	35.54%	4.6088	1.9554
0.4	10	11.733	0.00000	CH_TA(-9m)	≤	0.2363	5.73	5.36%	80	80.80%	35.57%	4.5451	1.9560
0.4	11	11.595	0.00000	ROA(-12m)	≥	-0.1173	5.51	5.15%	76	76.65%	26.07%	7.5087	2.5080
0.4	12	11.536	0.00000	CH_SALES(-9m)	≥	-0.2144	5.48	5.12%	76	76.88%	26.08%	7.4431	2.5146
0.4	13	11.511	0.00000	CH_ASSTURN(-12m)	≥	-0.3121	5.38	5.02%	76	77.09%	26.27%	7.2772	2.5036
0.4	14	11.399	0.00000	CH_INVtSALES(-9m)	≤	0.3021	4.94	4.62%	71	78.20%	27.51%	6.7261	2.4324
0.4	15	11.344	0.00000	POS_NET	≥	4.0000	4.61	4.31%	71	81.58%	27.92%	7.0056	2.5186
0.4	16	11.186	0.00000	CH_SALES(-12m)	≥	-0.1429	4.58	4.28%	70	81.33%	28.14%	6.7588	2.4888
0.4	17	11	0.00000	POS_ROE	≥	3.0000	4.53	4.23%	70	81.41%	28.88%	6.3501	2.4308
0.4	18	10.873	0.00000	ROE	≤	0.3420	4.41	4.12%	68	80.98%	29.00%	6.1482	2.4045
0.4	19	10.674	0.00000	PRETAX_PM	≤	0.2426	4.28	4.00%	68	80.92%	29.07%	6.0357	2.3965
0.4	20	10.672	0.00000	ROA	≤	0.1331	4.16	3.89%	68	81.47%	29.11%	6.0250	2.4116

[14] Annualized standard deviation = Standard deviation of monthly portfolio returns $\times\sqrt{12}$

Appendix D.4. Results for static comparison level tests

The tables below show the results from the stepwise median comparison test. Each table that follows provides the results from this test while using a particular static comparison level (for the table below, CL = 20 percent). The table shows the filtering variables and their corresponding filter levels as each subsequent filter is added. For example, filter number 3 in the table below represents a filter of all shares in the insample where MTB ≤ 0.67, CH_TA(-6m) ≤ 0.2026 and POS_ROE ≥ 3. For each combination of filters the z-statistic from the Wilcoxon signed ranks test comparing the median return of the filtered portfolio to the relevant comparison level along with its p-value is shown. The tables also show the average number of companies held in any month, and the amount of companies held as a proportion of the entire sample. The number of winners picked out of a possible 1104 insample winners is indicated. Finally, the tables show the average annual return and annualized standard deviation of monthly portfolio returns of each filtered portfolio over the period from January 1995 until December 2004 as well as the JK statistic and Sharpe ratio.

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.2	1	15.141	0.00000	MTB	≤	0.6700	20.28	18.95%	242	53.41%	70.05%	0.6264	0.5901
0.2	2	15.702	0.00000	CH_TA(-6m)	≤	0.2026	12.39	11.58%	157	67.48%	77.79%	0.7656	0.7185
0.2	3	16.162	0.00000	POS_ROE	≥	3.0000	11.92	11.14%	157	69.71%	78.02%	0.7987	0.7467
0.2	4	16.529	0.00000	CAPGEAR	≥	-0.2875	11.77	11.00%	157	70.82%	78.04%	0.8109	0.7605
0.2	5	16.859	0.00000	POS_OP	≥	-8.0000	11.09	10.37%	150	73.22%	33.69%	4.5655	1.8384
0.2	6	16.895	0.00000	CH_TA	≤	0.3777	10.37	9.69%	149	73.93%	30.70%	5.5186	2.0413
0.2	7	16.913	0.00000	ROA(-12m)	≥	-0.1173	10.02	9.36%	141	72.56%	26.53%	7.0001	2.3069
0.2	8	16.83	0.00000	ROE	≤	0.3420	9.90	9.25%	139	72.32%	26.57%	6.8354	2.2946
0.2	9	16.719	0.00000	OPINCITA	≤	0.2886	9.78	9.14%	137	71.71%	26.43%	6.6916	2.2835
0.2	10	16.335	0.00000	CH_TA(-9m)	≤	0.4455	9.36	8.75%	132	73.37%	26.71%	6.7491	2.3201
0.2	11	15.879	0.00000	CH_ASSTURN(-6m)	≥	-0.2930	8.96	8.37%	122	71.92%	26.73%	6.3761	2.2631
0.2	12	15.637	0.00000	CH_SALES(-9m)	≥	-0.2144	8.70	8.13%	118	71.42%	26.99%	6.0810	2.2226
0.2	13	15.403	0.00000	CH_SALES(-12m)	≥	-0.2144	8.18	7.65%	113	72.67%	27.47%	5.9794	2.2255
0.2	14	15.315	0.00000	CH_ASSTURN(-12m)	≥	-0.3121	8.16	7.62%	113	72.60%	27.54%	5.8627	2.2184
0.2	15	15.012	0.00000	CH_TA(-12m)	≤	0.3696	7.64	7.14%	108	73.38%	27.66%	5.8466	2.2353
0.2	16	14.826	0.00000	ACCITA	≤	0.0654	7.40	6.92%	102	71.24%	27.78%	5.3915	2.1501
0.2	17	14.615	0.00000	CH_ASSTURN	≥	-0.1652	7.05	6.59%	101	71.49%	27.87%	5.3239	2.1536
0.2	18	14.365	0.00000	CH_INVITA(-12m)	≥	-0.0248	6.08	5.68%	88	74.23%	27.13%	5.9500	2.3089
0.2	19	14.087	0.00000	ROE(-12m)	≥	-0.1618	5.90	5.51%	87	74.26%	27.11%	5.8847	2.3114
0.2	20	13.943	0.00000	CH_ARISALES	≤	0.3194	5.69	5.32%	87	75.98%	30.49%	4.8073	2.1162
0.2	21	13.726	0.00000	OPINCITA(-12m)	≥	-0.0778	5.53	5.17%	80	72.30%	30.47%	4.3020	1.9955
0.2	22	13.346	0.00000	ROE(-9m)	≥	-0.0748	5.53	5.16%	78	71.77%	30.57%	4.1601	1.9706
0.2	23	13.149	0.00000	EY(-12m)	≥	-0.0335	5.48	5.12%	75	71.15%	30.60%	4.0288	1.9463
0.2	24	13.148	0.00000	DY(-12m)	≥	0.0167	5.28	4.93%	74	72.57%	25.67%	5.8826	2.3787
0.2	25	13.063	0.00000	EY(-9m)	≥	0.0784	4.88	4.56%	72	73.12%	23.76%	6.8873	2.5959
0.2	26	12.901	0.00000	DY(-9m)	≥	0.0018	4.74	4.43%	69	72.27%	23.87%	6.5863	2.5476
0.2	27	12.568	0.00000	CH_DPS(-12m)	≥	-0.5693	4.57	4.27%	66	71.61%	24.80%	5.9196	2.4245
0.2	28	12.162	0.00000	CH_INVISALES(-9m)	≤	0.3021	4.14	3.87%	60	72.21%	26.13%	5.3530	2.3260
0.2	29	11.755	0.00000	CH_DEP	≤	0.5228	4.04	3.78%	57	72.12%	26.36%	5.1878	2.3006
0.2	30	11.18	0.00000	CH_EBTISALES(-12m)	≥	-0.7558	3.76	3.51%	53	72.85%	25.74%	5.4803	2.3825
0.2	31	10.656	0.00000	ROA	≤	0.1331	3.53	3.29%	53	73.83%	26.08%	5.4168	2.3846
0.2	32	10.453	0.00000	PRETAX_PM	≤	0.2078	3.45	3.22%	53	73.99%	25.84%	5.4802	2.4103
0.2	33	10.059	0.00000	CH_INVTURN(-12m)	≥	-2.3977	3.35	3.13%	53	75.67%	27.09%	5.1580	2.3598
0.2	34	9.9861	0.00000	POS_NET	≥	4.0000	3.19	2.98%	53	78.39%	27.88%	5.1660	2.3922
0.2	35	9.7844	0.00000	CH_INVTURN(-6m)	≥	-2.3977	3.15	2.94%	52	78.14%	27.84%	5.0958	2.3857
0.2	36	9.2809	0.00000	SDEV_VOL(-9m)	≥	-1.4093	3.03	2.83%	42	81.06%	26.85%	5.8179	2.5738
0.2	37	8.7686	0.00000	POS_OP(-12m)	≤	32.0000	2.63	2.46%	36	79.30%	28.67%	4.8313	2.3473
0.2	38	8.455	0.00000	SDEV_VOL	≥	-0.4409	2.45	2.29%	35	81.11%	29.18%	4.8263	2.3635
0.2	39	8.183	0.00000	SDEV_VOL(-12m)	≥	-1.2656	2.33	2.18%	34	82.06%	29.27%	4.8609	2.3835
0.2	40	7.8693	0.00000	SALESTCASH	≥	-28.0377	2.23	2.09%	33	85.22%	29.40%	5.1394	2.4739
0.2	41	7.5707	0.00000	SDEV_VOL(-6m)	≥	-0.9470	2.09	1.95%	32	85.64%	29.40%	5.1383	2.4796
0.2	42	7.2587	0.00000	REVISION_12	≤	0.0784	2.04	1.91%	32	88.11%	30.17%	5.1120	2.4900
0.2	43	6.9869	0.00000	CH_DPS(-9m)	≥	-0.4286	1.85	1.73%	32	89.52%	30.57%	5.0900	2.4976
0.2	44	6.8447	0.00000	CH_DEP(-12m)	≤	0.3075	1.73	1.62%	31	91.16%	28.99%	5.8141	2.6969
0.2	45	6.6943	0.00000	EARNG_24(-12m)	≥	-0.1674	1.71	1.60%	31	93.41%	29.28%	5.9267	2.7524
0.2	46	6.5191	0.00000	POS_NET(-12m)	≤	20.0000	1.59	1.49%	28	91.38%	25.90%	7.1783	3.0317
0.2	47	6.2768	0.00000	CH_QUICK	≤	0.0989	1.38	1.29%	28	94.32%	26.49%	7.2404	3.0730
0.2	48	6.0236	0.00000	GM(-12m)	≥	0.0367	1.24	1.16%	26	93.12%	26.81%	6.8247	2.9842
0.2	49	5.6889	0.00000	GM	≥	-0.0822	1.11	1.04%	26	96.87%	26.77%	7.3404	3.1172
0.2	50	5.4766	0.00000	EARNG_24(-9m)	≥	-0.1156	1.08	1.01%	23	92.87%	29.90%	5.3575	2.6533
0.2	51	5.0992	0.00000	GFORECAST_12	≤	5.2150	1.04	0.97%	21	93.82%	31.50%	4.8801	2.5568
0.2	52	4.5954	0.00000	REVISION_24	≤	0.1064	0.99	0.93%	15	84.66%	31.43%	3.9543	2.2782
0.2	53	4.3607	0.00000	NOSHARES	≤	162222	0.88	0.82%	15	87.02%	31.46%	4.1338	2.3675
0.2	54	3.6496	0.00015	EARNG_60	≤	0.2944	0.73	0.68%	10	79.06%	26.45%	4.7848	2.5211
0.2	55	3.5614	0.00020	NTC	≥	46.6266	0.53	0.49%	10	83.86%	29.64%	4.2475	2.4031
0.2	56	3.1801	0.00075	MOM_3(-9m)	≥	-0.2761	0.50	0.47%	8	80.78%	28.91%	4.1075	2.3705
0.2	57	2.5495	0.00540	MOM_6(-6m)	≥	-0.3419	0.47	0.44%	4	68.22%	31.31%	2.4764	1.7945
0.2	58	2.014	0.02200	MOM_3(-6m)	≥	-0.2988	0.27	0.25%	3	65.37%	40.83%	1.3253	1.3103
0.2	59	1.0483	0.14725	EARNG_12	≥	-0.0153	0.24	0.23%	0	35.26%	41.46%	0.3709	0.5831
0.2	60	0.809	0.20925	MOM_6(-3m)	≥	-0.1964	0.24	0.23%	0	36.14%	41.46%	0.3863	0.6014
0.2	61	0.1826	0.42755	DY	≤	0.0470	0.14	0.13%	0	22.73%	22.66%	0.5072	0.5471

Appendix D.4. Results for static comparison level tests

Continued: Comparison level = 25 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.25	1	12.494	0.00000	MTB	≤	0.6700	20.28	18.95%	242	53.41%	70.05%	0.6264	0.5901
0.25	2	14.254	0.00000	CH_TA(-6m)	≤	0.2026	12.39	11.58%	157	67.48%	77.79%	0.7656	0.7185
0.25	3	15.017	0.00000	NTC	≥	12.7478	9.86	9.21%	119	72.04%	31.98%	5.0278	1.8987
0.25	4	15.136	0.00000	ROA(-12m)	≥	-0.1173	9.42	8.80%	111	70.39%	26.43%	6.9099	2.2316
0.25	5	15.211	0.00000	POS_ROE	≥	-9.0000	9.32	8.71%	111	70.61%	26.42%	6.8565	2.2411
0.25	6	15.111	0.00000	POS_NET	≥	2.0000	9.18	8.58%	111	70.84%	26.41%	6.8017	2.2501
0.25	7	15.052	0.00000	CH_TA	≤	0.3777	8.78	8.20%	111	71.12%	26.55%	6.6804	2.2484
0.25	8	14.924	0.00000	OPINCtTA	≤	0.2886	8.65	8.08%	109	70.40%	26.40%	6.5228	2.2340
0.25	9	14.809	0.00000	CH_TA(-9m)	≤	0.3757	8.30	7.76%	106	73.04%	26.44%	6.8809	2.3288
0.25	10	14.651	0.00000	ROE	≤	0.3420	8.17	7.63%	104	72.70%	26.48%	6.7037	2.3126
0.25	11	14.337	0.00000	CH_TA(-12m)	≤	0.3696	7.56	7.06%	96	74.08%	26.70%	6.7299	2.3420
0.25	12	14.001	0.00000	ROE(-12m)	≥	-0.1618	7.27	6.79%	95	74.26%	26.70%	6.6628	2.3488
0.25	13	13.766	0.00000	OPINCtTA(-12m)	≥	-0.0778	7.11	6.64%	88	71.14%	26.65%	6.0559	2.2359
0.25	14	13.41	0.00000	ROE(-9m)	≥	-0.0748	6.88	6.43%	85	70.69%	26.72%	5.8612	2.2094
0.25	15	13.191	0.00000	EY(-12m)	≥	0.0449	6.57	6.14%	82	71.66%	27.25%	5.7075	2.2014
0.25	16	13.014	0.00000	EY(-9m)	≥	0.0034	6.34	5.93%	78	71.10%	27.48%	5.4527	2.1622
0.25	17	12.632	0.00000	CH_ASSTURN(-6m)	≥	-0.0970	5.72	5.34%	60	67.66%	25.93%	5.4581	2.1675
0.25	18	12.568	0.00000	CH_INVtTA(-12m)	≥	-0.0248	5.06	4.73%	58	70.30%	26.09%	5.7373	2.2577
0.25	19	12.538	0.00000	CH_ASSTURN	≥	-0.1254	4.84	4.52%	56	70.03%	26.43%	5.4784	2.2203
0.25	20	12.504	0.00000	ACCtTA	≤	0.0654	4.74	4.43%	55	69.81%	25.95%	5.5799	2.2527
0.25	21	12.411	0.00000	CH_SALES(-9m)	≥	-0.2144	4.72	4.41%	55	69.99%	25.95%	5.5370	2.2578
0.25	22	12.353	0.00000	CH_ASSTURN(-12m)	≥	-0.3121	4.61	4.31%	55	70.17%	26.17%	5.4085	2.2451
0.25	23	12.284	0.00000	DY(-12m)	≥	0.0044	4.50	4.21%	55	70.17%	26.27%	5.3037	2.2367
0.25	24	12.178	0.00000	DY(-9m)	≥	0.0018	4.48	4.18%	54	69.77%	26.43%	5.1188	2.2079
0.25	25	12.042	0.00000	CH_ARISALES	≤	0.2437	4.38	4.09%	54	71.04%	22.27%	7.3837	2.6848
0.25	26	11.73	0.00000	CH_INVtSALES(-9m)	≤	0.3021	3.96	3.70%	49	71.82%	23.45%	6.7211	2.5859
0.25	27	11.42	0.00000	CH_SALES(-12m)	≥	-0.0714	3.79	3.54%	46	70.93%	23.22%	6.6072	2.5718
0.25	28	11.078	0.00000	CH_DPS(-12m)	≥	-0.5693	3.63	3.39%	43	70.08%	24.24%	5.8441	2.4268
0.25	29	10.665	0.00000	MOM_3(-9m)	≥	-0.2761	3.58	3.35%	39	68.93%	24.83%	5.3263	2.3289
0.25	30	10.292	0.00000	MOM_6(-6m)	≥	-0.3419	3.40	3.18%	32	66.99%	26.87%	4.2454	2.0829
0.25	31	10.123	0.00000	MOM_3(-6m)	≥	-0.2988	3.37	3.15%	30	66.45%	27.67%	3.8953	2.0045
0.25	32	9.8151	0.00000	NOSHARES	≤	178388	3.11	2.90%	27	64.42%	28.38%	3.4422	1.8828
0.25	33	9.3419	0.00000	CH_INVtTA	≥	-0.0250	2.48	2.32%	27	67.01%	27.82%	3.8285	2.0115
0.25	34	8.8474	0.00000	CH_DPS(-9m)	≥	-0.4286	2.33	2.18%	21	69.34%	27.58%	4.1177	2.1137
0.25	35	8.7282	0.00000	CH_EBTtSALES(-12m)	≥	-0.7558	2.20	2.06%	21	70.65%	27.53%	4.2444	2.1631
0.25	36	8.2455	0.00000	MOM_6(-3m)	≥	-0.1964	1.86	1.74%	17	68.11%	32.26%	2.8421	1.7750
0.25	37	7.8014	0.00000	CH_DEP	≤	0.5228	1.76	1.64%	14	66.74%	32.71%	2.6261	1.7071
0.25	38	7.3564	0.00000	POS_NET(-12m)	≤	32.0000	1.59	1.49%	6	59.16%	32.46%	2.0729	1.4882
0.25	39	6.751	0.00000	POS_OP(-12m)	≤	32.0000	1.40	1.31%	5	56.98%	32.01%	1.9563	1.4481
0.25	40	6.3765	0.00000	SALEStCASH	≥	-28.0377	1.30	1.21%	4	58.08%	32.62%	1.9370	1.4542
0.25	41	5.8038	0.00000	POS_OP	≥	4.0000	1.20	1.12%	4	57.11%	32.31%	1.8887	1.4334
0.25	42	5.3766	0.00000	GM(-12m)	≥	-0.0822	0.90	0.84%	3	58.38%	34.82%	1.6812	1.3757
0.25	43	4.5954	0.00000	SDEV_VOL(-12m)	≥	-1.2656	0.88	0.83%	3	59.29%	36.25%	1.5840	1.3453
0.25	44	4.0629	0.00000	CH_INVTURN(-6m)	≥	-2.3977	0.87	0.81%	3	58.84%	37.60%	1.4351	1.2835
0.25	45	3.6843	0.00010	CH_INVTURN(-12m)	≥	-2.3977	0.74	0.69%	3	60.83%	39.60%	1.3690	1.2727
0.25	46	3.4407	0.00030	GM	≥	-0.0822	0.63	0.59%	3	61.00%	40.07%	1.3326	1.2622
0.25	47	3.025	0.00125	EARNG_12	≥	-0.0153	0.52	0.48%	0	47.59%	38.94%	0.8506	0.9630
0.25	48	2.4711	0.00675	SDEV_VOL(-9m)	≥	-1.4093	0.51	0.48%	0	47.14%	39.86%	0.7889	0.9293
0.25	49	2.2509	0.01220	SDEV_VOL	≥	-0.4409	0.48	0.45%	0	51.29%	39.19%	0.9571	1.0507
0.25	50	1.3484	0.08875	SDEV_VOL(-6m)	≥	-0.9470	0.45	0.42%	0	47.13%	39.19%	0.8009	0.9148

Appendix D.4. Results for static comparison level tests

Continued: Comparison level = 30 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.3	1	9.7217	0.00000	MTB	≤	0.6700	20.28	18.95%	242	53.41%	70.05%	0.6264	0.5901
0.3	2	12.613	0.00000	CH_TA(-6m)	≤	0.2026	12.39	11.58%	157	67.48%	77.79%	0.7656	0.7185
0.3	3	13.662	0.00000	NTC	≥	12.7478	9.86	9.21%	119	72.04%	31.98%	5.0278	1.8987
0.3	4	13.859	0.00000	ROA(-12m)	≥	-0.1173	9.42	8.80%	111	70.39%	26.43%	6.9099	2.2316
0.3	5	13.942	0.00000	POS_ROE	≥	-9.0000	9.32	8.71%	111	70.61%	26.42%	6.8565	2.2411
0.3	6	13.906	0.00000	CH_TA(-9m)	≤	0.3757	8.95	8.36%	107	72.56%	26.27%	7.1918	2.3264
0.3	7	13.837	0.00000	OPINCtTA	≤	0.2886	8.84	8.26%	106	72.43%	26.21%	7.0951	2.3273
0.3	8	13.747	0.00000	POS_NET	≥	2.0000	8.71	8.14%	106	72.70%	26.20%	7.0453	2.3375
0.3	9	13.7	0.00000	CH_TA	≤	0.3777	8.30	7.76%	106	73.04%	26.44%	6.8809	2.3288
0.3	10	13.525	0.00000	ROE	≤	0.3420	8.17	7.63%	104	72.70%	26.48%	6.7037	2.3126
0.3	11	13.314	0.00000	CH_TA(-12m)	≤	0.2605	7.41	6.92%	96	74.89%	26.62%	6.9133	2.3779
0.3	12	13.083	0.00000	CH_INVtTA(-12m)	≥	-0.0248	6.35	5.93%	80	74.72%	27.99%	6.1194	2.2573
0.3	13	12.999	0.00000	CH_ASSTURN	≥	-0.1254	5.94	5.55%	77	75.37%	27.62%	6.3037	2.3149
0.3	14	12.964	0.00000	ACCtTA	≤	0.0654	5.84	5.46%	76	75.20%	27.17%	6.3995	2.3467
0.3	15	12.822	0.00000	CH_ASSTURN(-6m)	≥	-0.0970	5.25	4.91%	64	73.17%	25.59%	6.7243	2.4171
0.3	16	12.744	0.00000	CH_SALES(-9m)	≥	-0.2144	5.23	4.88%	64	73.37%	25.61%	6.6624	2.4219
0.3	17	12.697	0.00000	CH_ASSTURN(-12m)	≥	-0.3121	5.12	4.78%	64	73.56%	25.82%	6.5063	2.4090
0.3	18	12.556	0.00000	CH_SALES(-12m)	≥	-0.1429	5.08	4.75%	63	73.21%	26.01%	6.2694	2.3777
0.3	19	12.262	0.00000	CH_INVtSALES(-9m)	≤	0.3021	4.65	4.35%	58	74.11%	27.38%	5.7165	2.2931
0.3	20	11.96	0.00000	CH_DEP	≤	0.5228	4.40	4.11%	55	75.40%	21.90%	9.1264	2.9317
0.3	21	11.647	0.00000	ROE(-12m)	≥	-0.1618	4.23	3.95%	54	75.50%	21.88%	9.0471	2.9389
0.3	22	11.572	0.00000	OPINCtTA(-12m)	≥	-0.0778	4.12	3.85%	52	73.83%	22.02%	8.4421	2.8448
0.3	23	11.393	0.00000	CH_ARISALES	≤	0.2437	4.07	3.80%	52	74.25%	22.02%	8.4315	2.8659
0.3	24	11.041	0.00000	ROE(-9m)	≥	-0.0748	3.90	3.64%	51	73.78%	22.30%	8.0175	2.8070
0.3	25	10.84	0.00000	DY(-12m)	≥	0.0229	3.73	3.49%	48	75.49%	22.08%	8.4542	2.9097
0.3	26	10.781	0.00000	EY(-12m)	≥	0.0710	3.66	3.42%	48	76.07%	22.07%	8.4924	2.9366
0.3	27	10.659	0.00000	EY(-9m)	≥	0.0034	3.54	3.31%	46	75.64%	22.53%	7.9671	2.8578
0.3	28	10.605	0.00000	DY(-9m)	≥	0.0229	3.54	3.31%	46	76.17%	22.44%	8.0526	2.8944
0.3	29	10.236	0.00000	CH_DPS(-12m)	≥	-0.5693	3.38	3.15%	43	75.47%	23.51%	7.1166	2.7318
0.3	30	9.8835	0.00000	CH_EBTtSALES(-12m)	≥	-0.6120	3.10	2.90%	39	76.28%	23.52%	7.1756	2.7675
0.3	31	9.5014	0.00000	CH_DPS(-9m)	≥	-0.4286	2.79	2.61%	37	81.43%	24.41%	7.4958	2.8711
0.3	32	9.3725	0.00000	CH_INVtTA	≥	-0.0250	2.53	2.37%	37	82.77%	24.33%	7.7109	2.9358
0.3	33	9.0264	0.00000	NOSHARES	≤	162222	2.28	2.13%	29	77.64%	24.75%	6.4790	2.6794
0.3	34	8.6636	0.00000	MOM_3(-6m)	≥	-0.2988	2.21	2.06%	22	74.54%	26.38%	5.2018	2.4010
0.3	35	8.5227	0.00000	MOM_6(-6m)	≥	-0.3419	2.19	2.05%	20	73.67%	27.08%	4.7684	2.3096
0.3	36	8.2176	0.00000	MOM_3(-9m)	≥	-0.2761	2.15	2.01%	19	74.24%	27.82%	4.5407	2.2764
0.3	37	7.81	0.00000	POS_NET(-12m)	≤	32.0000	1.98	1.85%	11	67.82%	27.52%	3.8306	2.0696
0.3	38	7.2451	0.00000	POS_OP(-12m)	≤	32.0000	1.79	1.67%	10	67.02%	26.97%	3.8527	2.0897
0.3	39	6.8467	0.00000	SALEStCASH	≥	-28.0377	1.69	1.58%	9	68.70%	27.17%	3.9456	2.1348
0.3	40	6.7266	0.00000	CH_DEP(-12m)	≤	0.2416	1.58	1.47%	9	68.52%	29.51%	3.2948	1.9653
0.3	41	6.3482	0.00000	MOM_6(-3m)	≥	-0.0386	1.39	1.30%	4	63.62%	33.15%	2.2273	1.6078
0.3	42	5.8291	0.00000	POS_OP	≥	4.0000	1.23	1.15%	4	63.42%	33.98%	2.0842	1.5590
0.3	43	5.3915	0.00000	GM(-12m)	≥	-0.0822	1.00	0.93%	3	59.25%	34.91%	1.7060	1.3966
0.3	44	4.9137	0.00000	EARNG_24(-9m)	≥	-0.1156	0.83	0.77%	3	61.82%	36.51%	1.6816	1.4063
0.3	45	4.669	0.00000	PRETAX_PM	≤	0.2078	0.80	0.75%	3	59.60%	36.93%	1.5129	1.3292
0.3	46	4.5841	0.00000	EARNG_24(-12m)	≥	-0.0069	0.70	0.65%	3	60.04%	36.80%	1.5314	1.3478
0.3	47	4.1212	0.00000	CH_INVTURN(-6m)	≥	-2.3977	0.65	0.61%	3	59.90%	36.88%	1.5034	1.3402
0.3	48	3.1388	0.00085	SDEV_VOL(-6m)	≥	-0.9470	0.58	0.54%	3	64.09%	39.53%	1.4834	1.3502

Appendix D.4. Results for static comparison level tests

Continued: Comparison level = 35 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.35	1	6.8644	0.00000	MTB	≤	0.6700	20.28	18.95%	242	53.41%	70.05%	0.6264	0.5901
0.35	2	10.838	0.00000	CH_TA(-6m)	≤	0.2026	12.39	11.58%	157	67.48%	77.79%	0.7656	0.7185
0.35	3	12.26	0.00000	CH_ASSTURN	≥	-0.0459	9.17	8.57%	114	73.12%	31.37%	5.3656	1.9747
0.35	4	12.735	0.00000	CAPGEAR	≥	-0.2875	9.03	8.44%	114	74.48%	31.45%	5.4534	2.0128
0.35	5	12.754	0.00000	CH_ASSTURN(-6m)	≥	-0.0970	8.17	7.63%	99	73.50%	31.68%	5.1442	1.9698
0.35	6	12.792	0.00000	CH_INVtTA(-12m)	≥	-0.0248	6.61	6.18%	86	79.39%	35.07%	4.7900	1.9444
0.35	7	12.843	0.00000	CH_TA(-12m)	≤	0.2605	6.05	5.65%	82	80.80%	35.10%	4.8726	1.9823
0.35	8	12.807	0.00000	OPINCtTA	≤	0.2886	6.04	5.65%	81	80.67%	35.08%	4.7934	1.9800
0.35	9	12.771	0.00000	ACCtTA	≤	0.0654	5.94	5.55%	80	80.52%	35.33%	4.6397	1.9611
0.35	10	12.741	0.00000	CH_TA(-9m)	≤	0.2363	5.84	5.46%	80	80.59%	35.36%	4.5755	1.9616
0.35	11	12.698	0.00000	CH_TA	≤	0.3777	5.73	5.36%	80	80.80%	35.57%	4.4829	1.9560
0.35	12	12.568	0.00000	ROA(-12m)	≥	-0.1173	5.51	5.15%	76	76.65%	26.07%	7.4072	2.5080
0.35	13	12.499	0.00000	CH_SALES(-9m)	≥	-0.2144	5.48	5.12%	76	76.88%	26.08%	7.3439	2.5146
0.35	14	12.461	0.00000	CH_ASSTURN(-12m)	≥	-0.3121	5.38	5.02%	76	77.09%	26.27%	7.1815	2.5036
0.35	15	12.316	0.00000	CH_SALES(-12m)	≥	-0.1429	5.34	4.99%	75	76.80%	26.44%	6.9417	2.4762
0.35	16	12.139	0.00000	POS_ROE	≥	3.0000	5.29	4.95%	75	76.79%	26.76%	6.6838	2.4478
0.35	17	12.024	0.00000	ROE	≤	0.3420	5.18	4.84%	73	76.37%	26.86%	6.4777	2.4225
0.35	18	11.801	0.00000	CH_INVtSALES(-9m)	≤	0.3021	4.74	4.43%	68	77.49%	28.58%	5.8106	2.3181
0.35	19	11.58	0.00000	ROA	≤	0.1331	4.49	4.20%	68	77.82%	28.67%	5.7476	2.3211
0.35	20	11.404	0.00000	PRETAX_PM	≤	0.2426	4.42	4.13%	68	78.02%	28.59%	5.7376	2.3334
0.35	21	11.33	0.00000	POS_NET	≥	4.0000	4.16	3.89%	68	81.47%	29.11%	5.9524	2.4116
0.35	22	11.025	0.00000	ROE(-12m)	≥	-0.1618	3.98	3.72%	67	81.86%	29.35%	5.8367	2.4055
0.35	23	10.943	0.00000	OPINCtTA(-12m)	≥	-0.0778	3.88	3.62%	65	80.15%	29.53%	5.4608	2.3326
0.35	24	10.783	0.00000	CH_ARISALES	≤	0.2437	3.83	3.57%	65	80.79%	29.67%	5.4300	2.3450
0.35	25	10.423	0.00000	MOM_3(-6m)	≥	-0.2988	3.57	3.33%	53	79.71%	29.01%	5.4559	2.3684
0.35	26	10.072	0.00000	MOM_6(-6m)	≥	-0.3419	3.45	3.22%	47	78.85%	31.30%	4.5318	2.1723
0.35	27	9.808	0.00000	MOM_3(-9m)	≥	-0.2761	3.27	3.05%	45	78.80%	31.60%	4.3875	2.1536
0.35	28	9.3696	0.00000	DY(-12m)	≥	0.0229	3.16	2.95%	41	80.39%	31.62%	4.5021	2.2001
0.35	29	9.2782	0.00000	EY(-12m)	≥	-0.0335	3.14	2.94%	41	80.32%	31.59%	4.4514	2.1993
0.35	30	9.142	0.00000	ROE(-9m)	≥	-0.0748	3.12	2.91%	40	80.23%	31.55%	4.4040	2.1992
0.35	31	8.9965	0.00000	EY(-9m)	≥	0.0034	3.00	2.80%	38	79.73%	31.87%	4.2158	2.1617
0.35	32	8.8977	0.00000	DY(-9m)	≥	0.0018	2.89	2.70%	36	78.84%	31.89%	4.0726	2.1325
0.35	33	8.4719	0.00000	CH_INVTURN(-12m)	≥	-2.3977	2.67	2.49%	35	79.17%	26.66%	5.8121	2.5596
0.35	34	8.26	0.00000	CH_INVTURN(-6m)	≥	-2.3977	2.60	2.43%	35	79.65%	26.42%	5.9224	2.6012
0.35	35	7.978	0.00000	CH_EBTtSALES(-12m)	≥	-0.7558	2.55	2.38%	32	77.46%	25.97%	5.7342	2.5661
0.35	36	7.634	0.00000	CH_DPS(-12m)	≥	-0.5693	2.41	2.25%	29	76.08%	27.12%	5.0187	2.4096
0.35	37	7.3599	0.00000	CH_DPS(-9m)	≥	-0.4286	2.09	1.95%	26	83.70%	28.29%	5.5179	2.5759
0.35	38	7.2923	0.00000	CH_INVtTA	≥	-0.0250	1.88	1.75%	26	85.83%	30.25%	5.0207	2.4801
0.35	39	7.1248	0.00000	NOSHARES	≤	162222	1.66	1.55%	23	82.25%	31.91%	4.1011	2.2393
0.35	40	6.8344	0.00000	NTC	≥	12.7478	1.53	1.43%	19	80.09%	34.27%	3.3383	2.0218
0.35	41	6.407	0.00000	MOM_6(-3m)	≥	-0.1964	1.40	1.31%	17	78.27%	36.07%	2.8479	1.8706
0.35	42	5.8669	0.00000	POS_OP	≥	8.0000	1.07	1.00%	16	85.77%	40.60%	2.6692	1.8453
0.35	43	5.25	0.00000	CH_DEP	≤	0.2475	0.97	0.90%	13	86.65%	40.20%	2.7513	1.8824
0.35	44	4.7914	0.00000	EARNG_24(-12m)	≥	-0.1674	0.92	0.86%	7	74.18%	38.77%	2.1459	1.6323
0.35	45	4.7101	0.00000	EARNG_24(-9m)	≥	-0.1156	0.82	0.76%	6	72.42%	39.68%	1.9349	1.5504
0.35	46	4.6274	0.00000	POS_NET(-12m)	≤	32.0000	0.80	0.75%	5	70.18%	39.60%	1.8071	1.4983
0.35	47	4.5429	0.00000	GM(-12m)	≥	-0.0822	0.70	0.65%	4	67.57%	39.72%	1.6495	1.4275
0.35	48	4.1857	0.00000	CH_QUICK	≤	0.0989	0.48	0.45%	1	60.32%	35.62%	1.6195	1.3954
0.35	49	3.3352	0.00045	SDEV_VOL(-9m)	≥	-1.4093	0.48	0.44%	0	54.08%	35.75%	1.2799	1.2281
0.35	50	2.9417	0.00165	SDEV_VOL	≥	-0.4409	0.48	0.44%	0	55.45%	35.68%	1.3384	1.2844
0.35	51	2.6502	0.00400	SALEStCASH	≥	-28.0377	0.29	0.27%	0	49.46%	28.08%	1.7030	1.4363
0.35	52	2.4879	0.00645	GFORECAST_12	≤	2.0550	0.28	0.26%	0	50.37%	27.99%	1.7625	1.4799
0.35	53	2.3105	0.01045	REVISION_24	≤	0.3213	0.28	0.26%	0	48.82%	27.99%	1.6412	1.4203
0.35	54	1.8869	0.02960	EARNG_12	≥	-0.0153	0.18	0.16%	0	48.23%	19.04%	3.4306	2.0843
0.35	55	1.278	0.10060	SDEV_VOL(-6m)	≥	-0.9470	0.15	0.14%	0	41.86%	15.72%	3.7605	2.1010

Appendix D.4. Results for static comparison level tests

Continued: Comparison level = 40 percent

CL	No	Z-stat	P-value	Variable	Filter Level		Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.4	1	3.9798	0.00005	MTB	≤	0.6700	20.28	18.95%	242	53.41%	70.05%	0.6264	0.5901
0.4	2	8.9244	0.00000	CH_TA(-6m)	≤	0.2026	12.39	11.58%	157	67.48%	77.79%	0.7656	0.7185
0.4	3	10.677	0.00000	CH_ASSTURN	≥	-0.0459	9.17	8.57%	114	73.12%	31.37%	5.3656	1.9747
0.4	4	11.448	0.00000	CH_INVtTA(-12m)	≥	-0.0248	7.36	6.88%	99	80.09%	34.37%	5.2416	2.0019
0.4	5	11.656	0.00000	CH_ASSTURN(-6m)	≥	-0.0970	6.61	6.18%	86	79.39%	35.07%	4.8615	1.9444
0.4	6	11.872	0.00000	CH_TA(-12m)	≤	0.2605	6.05	5.65%	82	80.80%	35.10%	4.9443	1.9823
0.4	7	11.841	0.00000	CH_TA	≤	0.3777	5.94	5.55%	82	81.00%	35.31%	4.8393	1.9764
0.4	8	11.8	0.00000	OPINCtTA	≤	0.2886	5.93	5.55%	81	80.88%	35.29%	4.7606	1.9742
0.4	9	11.759	0.00000	ACCtTA	≤	0.0654	5.83	5.45%	80	80.73%	35.54%	4.6088	1.9554
0.4	10	11.733	0.00000	CH_TA(-9m)	≤	0.2363	5.73	5.36%	80	80.80%	35.57%	4.5451	1.9560
0.4	11	11.595	0.00000	ROA(-12m)	≥	-0.1173	5.51	5.15%	76	76.65%	26.07%	7.5087	2.5080
0.4	12	11.536	0.00000	CH_SALES(-9m)	≥	-0.2144	5.48	5.12%	76	76.88%	26.08%	7.4431	2.5146
0.4	13	11.511	0.00000	CH_ASSTURN(-12m)	≥	-0.3121	5.38	5.02%	76	77.09%	26.27%	7.2772	2.5036
0.4	14	11.399	0.00000	CH_INVtSALES(-9m)	≤	0.3021	4.94	4.62%	71	78.20%	27.51%	6.7261	2.4324
0.4	15	11.344	0.00000	POS_NET	≥	4.0000	4.61	4.31%	71	81.58%	27.92%	7.0056	2.5186
0.4	16	11.186	0.00000	CH_SALES(-12m)	≥	-0.1429	4.58	4.28%	70	81.33%	28.14%	6.7588	2.4888
0.4	17	11	0.00000	POS_ROE	≥	3.0000	4.53	4.23%	70	81.41%	28.88%	6.3501	2.4308
0.4	18	10.873	0.00000	ROE	≤	0.3420	4.41	4.12%	68	80.98%	29.00%	6.1482	2.4045
0.4	19	10.674	0.00000	PRETAX_PM	≤	0.2426	4.28	4.00%	68	80.92%	29.07%	6.0357	2.3965
0.4	20	10.672	0.00000	ROA	≤	0.1331	4.16	3.89%	68	81.47%	29.11%	6.0250	2.4116
0.4	21	10.373	0.00000	ROE(-12m)	≥	-0.1618	3.98	3.72%	67	81.86%	29.35%	5.9070	2.4055
0.4	22	10.281	0.00000	OPINCtTA(-12m)	≥	-0.0778	3.88	3.62%	65	80.15%	29.53%	5.5258	2.3326
0.4	23	10.14	0.00000	CH_ARISALES	≤	0.2437	3.83	3.57%	65	80.79%	29.67%	5.4939	2.3450
0.4	24	9.862	0.00000	DY(-12m)	≥	0.0229	3.69	3.45%	60	82.61%	29.74%	5.6389	2.3960
0.4	25	9.7779	0.00000	EY(-12m)	≥	-0.0335	3.68	3.43%	60	82.58%	27.66%	6.4419	2.5753
0.4	26	9.7197	0.00000	EY(-9m)	≥	0.0784	3.36	3.14%	57	83.69%	26.26%	7.2472	2.7575
0.4	27	9.6255	0.00000	DY(-9m)	≥	0.0018	3.25	3.04%	55	83.03%	26.29%	7.0372	2.7293
0.4	28	9.2921	0.00000	CH_INVTURN(-12m)	≥	-2.3977	3.13	2.92%	54	83.49%	26.82%	6.7562	2.6869
0.4	29	9.0642	0.00000	CH_EBTtSALES(-12m)	≥	-0.7558	3.06	2.86%	51	82.57%	26.29%	6.7975	2.7093
0.4	30	8.9104	0.00000	ROE(-9m)	≥	-0.0260	3.03	2.83%	48	81.20%	26.13%	6.5797	2.6737
0.4	31	8.6396	0.00000	CH_INVTURN(-6m)	≥	-2.3977	2.98	2.79%	47	81.04%	26.02%	6.5400	2.6782
0.4	32	8.3634	0.00000	CH_DPS(-9m)	≥	-0.4286	2.63	2.46%	41	86.52%	27.37%	6.6473	2.7384
0.4	33	8.2595	0.00000	CH_DPS(-12m)	≥	-0.5693	2.53	2.36%	41	86.64%	28.19%	6.2177	2.6640
0.4	34	7.8662	0.00000	CH_INVtTA	≥	-0.0250	2.09	1.95%	36	88.19%	26.80%	7.0428	2.8687
0.4	35	7.5935	0.00000	NTC	≥	12.7478	1.96	1.83%	32	86.88%	27.83%	6.2709	2.7138
0.4	36	7.1472	0.00000	CH_QUICK	≤	0.0989	1.62	1.51%	25	82.74%	28.80%	5.2557	2.4801
0.4	37	6.8557	0.00000	GM(-12m)	≥	-0.0822	1.40	1.31%	22	86.00%	30.07%	5.1493	2.4783
0.4	38	6.6775	0.00000	POS_OP	≥	4.0000	1.38	1.29%	22	87.24%	31.45%	4.7944	2.4069
0.4	39	6.1708	0.00000	NOSHARES	≤	162222	1.12	1.04%	14	77.25%	32.10%	3.5696	2.0485
0.4	40	5.6998	0.00000	MOM_3(-9m)	≥	-0.2761	1.09	1.02%	12	77.19%	31.93%	3.5662	2.0706
0.4	41	5.3158	0.00000	MOM_6(-6m)	≥	-0.3419	1.03	0.96%	7	71.04%	33.49%	2.7176	1.7979
0.4	42	5.1833	0.00000	MOM_3(-6m)	≥	-0.2988	0.92	0.86%	6	70.40%	36.48%	2.2269	1.6364
0.4	43	4.7524	0.00000	MOM_6(-3m)	≥	-0.1964	0.79	0.74%	4	66.52%	41.55%	1.5178	1.3452
0.4	44	3.9553	0.00005	SALEStCASH	≥	-28.0377	0.69	0.65%	3	63.40%	40.05%	1.4686	1.3363
0.4	45	3.7867	0.00010	EARNG_12	≥	-0.0153	0.58	0.55%	3	64.52%	42.86%	1.3151	1.2762
0.4	46	3.5453	0.00020	GM	≥	-0.0822	0.48	0.44%	3	65.03%	48.07%	1.0521	1.1496
0.4	47	2.8007	0.00255	SDEV_VOL(-12m)	≥	-1.2656	0.38	0.36%	0	56.22%	42.85%	0.9798	1.0878
0.4	48	2.6502	0.00400	CH_DEP	≤	0.2475	0.28	0.26%	0	55.26%	41.81%	0.9851	1.0930
0.4	49	2.4879	0.00645	GFORECAST_12	≤	2.8450	0.28	0.26%	0	56.82%	41.81%	1.0321	1.1333
0.4	50	2.3105	0.01045	REVISION_24	≤	0.3213	0.28	0.26%	0	56.07%	41.81%	0.9962	1.1112
0.4	51	2.1129	0.01730	CH_DEP(-12m)	≤	0.0440	0.18	0.16%	0	51.26%	13.47%	7.9463	3.1452
0.4	52	1.6181	0.05280	SDEV_VOL(-6m)	≥	-0.9470	0.15	0.14%	0	47.38%	13.47%	6.7276	2.8292
0.4	53	0.8018	0.21135	SDEV_VOL(-9m)	≥	-1.4093	0.15	0.14%	0	46.06%	13.47%	6.3029	2.7447

Appendix D.4. Results for static comparison level tests

Continued: Comparison level = 45 to 51 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.45	1	1.4343	0.07575	OPINCtTA	≤ -0.0455	4.57	4.27%	111	70.96%	53.78%	1.7597	1.1113
0.45	2	5.4772	0.00000	CAPGEAR	≥ 0.5509	1.17	1.09%	52	134.10%	125.25%	1.1179	0.9859
0.45	3	6.0765	0.00000	NTC	≥ 35.3337	1.02	0.95%	52	149.30%	139.34%	1.1018	0.9937
0.45	4	6.0555	0.00000	NOSHARES	≤ 113724	0.81	0.76%	46	167.50%	158.02%	1.0607	0.9902
0.45	5	5.7139	0.00000	POS_OP	≥ 16.0000	0.76	0.71%	42	170.83%	163.06%	1.0203	0.9811
0.45	6	5.5509	0.00000	POS_NET	≥ 18.0000	0.74	0.69%	40	164.94%	165.39%	0.9108	0.9317
0.45	7	5.2501	0.00000	PRETAX_PM	≤ -0.1054	0.62	0.58%	36	158.53%	182.59%	0.6801	0.8087
0.45	8	5.1601	0.00000	ACCtTA	≤ 0.0884	0.62	0.58%	35	158.80%	182.59%	0.6726	0.8100
0.45	9	4.8942	0.00000	CH_ASSTURN(-12m)	≥ -0.3121	0.58	0.54%	32	156.69%	191.15%	0.5889	0.7615
0.45	10	4.5953	0.00000	CH_TA	≤ -0.0718	0.48	0.45%	27	174.35%	168.92%	0.9200	0.9670
0.45	11	4.2513	0.00000	MTB	≤ 1.6700	0.39	0.37%	21	204.29%	109.83%	2.9445	1.7642
0.45	12	4.1571	0.00000	CH_INVtTA(-12m)	≥ -0.0248	0.38	0.36%	20	203.12%	97.25%	3.6614	1.9801
0.45	13	3.6147	0.00015	CH_ASSTURN(-6m)	≥ -0.1623	0.33	0.31%	16	225.69%	87.16%	5.5512	2.4681
0.45	14	3.2658	0.00055	CH_SALES(-9m)	≥ -0.2144	0.31	0.29%	13	211.43%	90.51%	4.4564	2.2179
0.45	15	3.0051	0.00135	SDEV_VOL(-6m)	≥ -0.9470	0.29	0.27%	11	200.61%	76.70%	5.5145	2.4755
0.45	16	2.4879	0.00645	EARNG_24(-9m)	≥ -0.1156	0.27	0.25%	8	206.38%	79.00%	5.4282	2.4805
0.45	17	1.278	0.10060	MOM_3(-6m)	≥ -0.2988	0.24	0.23%	3	115.59%	77.20%	1.7599	1.3654
0.45	18	0.8018	0.21135	MOM_6(-6m)	≥ -0.3419	0.24	0.23%	2	94.12%	72.52%	1.3058	1.1571
0.5	1	0.6722	0.25070	OPINCtTA	≤ -0.0455	4.57	4.27%	111	70.96%	53.78%	1.7597	1.1113
0.5	2	5.2737	0.00000	CAPGEAR	≥ 0.5509	1.17	1.09%	52	134.10%	125.25%	1.1179	0.9859
0.5	3	5.9203	0.00000	NTC	≥ 35.3337	1.02	0.95%	52	149.30%	139.34%	1.1018	0.9937
0.5	4	5.9048	0.00000	NOSHARES	≤ 113724	0.81	0.76%	46	167.50%	158.02%	1.0607	0.9902
0.5	5	5.6093	0.00000	POS_OP	≥ 16.0000	0.76	0.71%	42	170.83%	163.06%	1.0203	0.9811
0.5	6	5.4419	0.00000	POS_NET	≥ 18.0000	0.74	0.69%	40	164.94%	165.39%	0.9108	0.9317
0.5	7	5.1413	0.00000	PRETAX_PM	≤ -0.1054	0.62	0.58%	36	158.53%	182.59%	0.6801	0.8087
0.5	8	5.0487	0.00000	ACCtTA	≤ 0.0884	0.62	0.58%	35	158.80%	182.59%	0.6726	0.8100
0.5	9	4.7744	0.00000	CH_ASSTURN(-12m)	≥ -0.3121	0.58	0.54%	32	156.69%	191.15%	0.5889	0.7615
0.5	10	4.4633	0.00000	CH_TA	≤ -0.0718	0.48	0.45%	27	174.35%	168.92%	0.9200	0.9670
0.5	11	4.1571	0.00000	MTB	≤ 1.6700	0.39	0.37%	21	204.29%	109.83%	2.9445	1.7642
0.5	12	4.0604	0.00000	CH_INVtTA(-12m)	≥ -0.0248	0.38	0.36%	20	203.12%	97.25%	3.6614	1.9801
0.5	13	3.5711	0.00020	CH_ASSTURN(-6m)	≥ -0.1623	0.33	0.31%	16	225.69%	87.16%	5.5512	2.4681
0.5	14	3.209	0.00065	CH_SALES(-9m)	≥ -0.2144	0.31	0.29%	13	211.43%	90.51%	4.4564	2.2179
0.5	15	2.9352	0.00165	SDEV_VOL(-6m)	≥ -0.9470	0.29	0.27%	11	200.61%	76.70%	5.5145	2.4755
0.5	16	2.4879	0.00645	EARNG_24(-9m)	≥ -0.1156	0.27	0.25%	8	206.38%	79.00%	5.4282	2.4805
0.5	17	1.278	0.10060	MOM_3(-6m)	≥ -0.2988	0.24	0.23%	3	115.59%	77.20%	1.7599	1.3654
0.5	18	0.8018	0.21135	MOM_6(-6m)	≥ -0.3419	0.24	0.23%	2	94.12%	72.52%	1.3058	1.1571
0.51	1	0.501	0.30820	OPINCtTA	≤ -0.0455	4.57	4.27%	111	70.96%	53.78%	1.7597	1.1113
0.51	2	5.2274	0.00000	CAPGEAR	≥ 0.5509	1.17	1.09%	52	134.10%	125.25%	1.1179	0.9859
0.51	3	5.895	0.00000	NOSHARES	≤ 113724	0.81	0.76%	46	167.50%	158.02%	1.0771	0.9902
0.51	4	5.6055	0.00000	POS_OP	≥ 16.0000	0.76	0.71%	42	170.83%	163.06%	1.0357	0.9811
0.51	5	5.4367	0.00000	POS_NET	≥ 18.0000	0.74	0.69%	40	164.94%	165.39%	0.9244	0.9317
0.51	6	5.1317	0.00000	PRETAX_PM	≤ -0.1054	0.62	0.58%	36	158.53%	182.59%	0.6901	0.8087
0.51	7	5.0382	0.00000	ACCtTA	≤ 0.0884	0.62	0.58%	35	158.80%	182.59%	0.6824	0.8100
0.51	8	4.7673	0.00000	CH_ASSTURN(-12m)	≥ -0.3121	0.58	0.54%	32	156.69%	191.15%	0.5973	0.7615
0.51	9	4.4539	0.00000	CH_TA	≤ -0.0718	0.48	0.45%	27	174.35%	168.92%	0.9330	0.9670
0.51	10	4.1975	0.00000	MTB	≤ 1.6700	0.39	0.37%	21	204.29%	109.83%	2.9854	1.7642
0.51	11	4.1	0.00000	CH_INVtTA(-12m)	≥ -0.0248	0.38	0.36%	20	203.12%	97.25%	3.7115	1.9801
0.51	12	3.5711	0.00020	CH_ASSTURN(-6m)	≥ -0.1623	0.33	0.31%	16	225.69%	87.16%	5.6262	2.4681
0.51	13	3.209	0.00065	CH_SALES(-9m)	≥ -0.2144	0.31	0.29%	13	211.43%	90.51%	4.5159	2.2179
0.51	14	2.9352	0.00165	SDEV_VOL(-6m)	≥ -0.9470	0.29	0.27%	11	200.61%	76.70%	5.5871	2.4755
0.51	15	2.4879	0.00645	EARNG_24(-9m)	≥ -0.1156	0.27	0.25%	8	206.38%	79.00%	5.4987	2.4805
0.51	16	1.278	0.10060	MOM_3(-6m)	≥ -0.2988	0.24	0.23%	3	115.59%	77.20%	1.7824	1.3654
0.51	17	0.8018	0.21135	MOM_6(-6m)	≥ -0.3419	0.24	0.23%	2	94.12%	72.52%	1.3223	1.1571

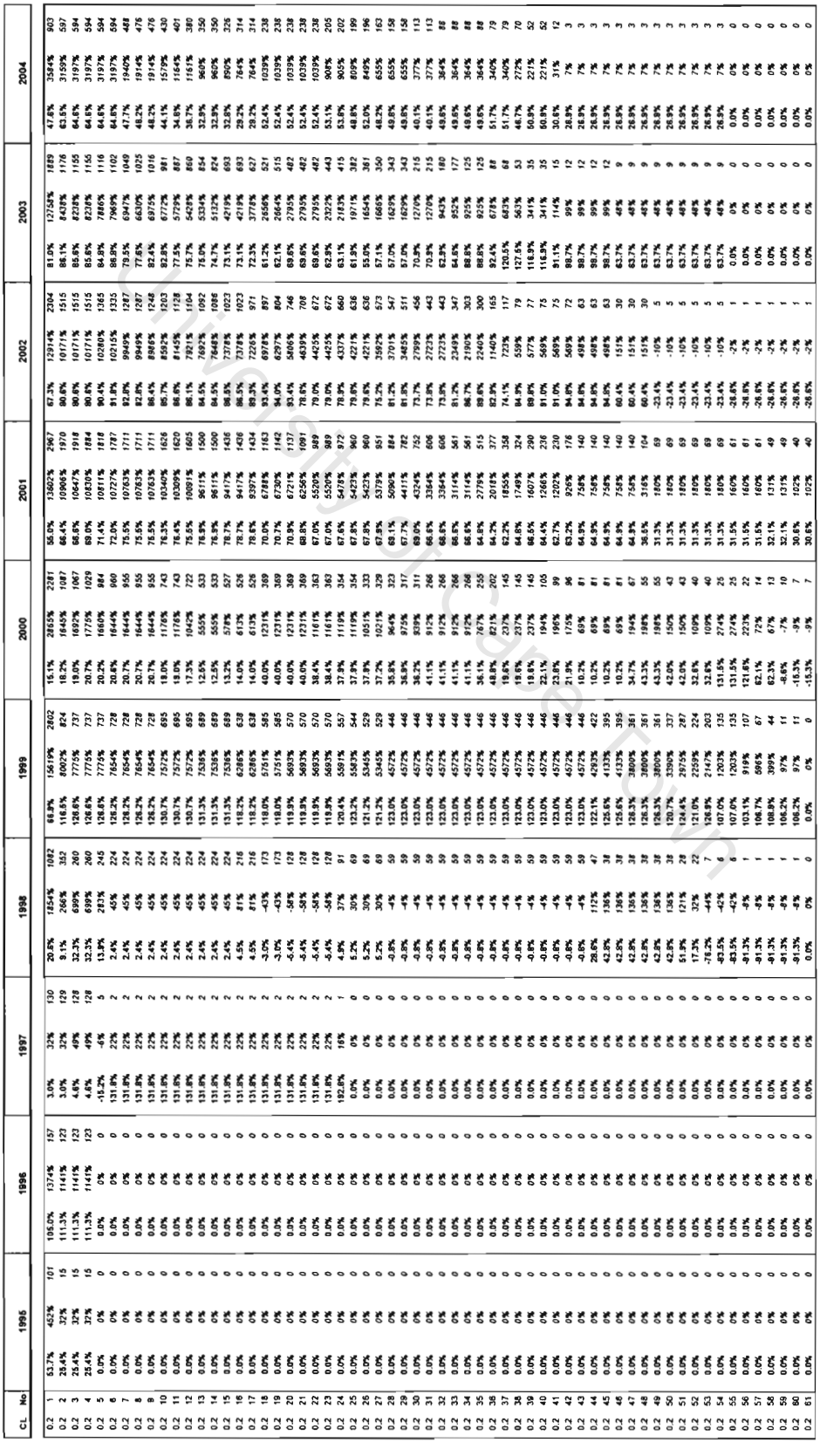
Appendix D.4. Results for static comparison level tests

Continued: Comparison level = 52 to 54 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.52	1	0.36	0.35940	OPINCITA	≤ -0.0455	4.57	4.27%	111	70.96%	53.78%	1.7597	1.1113
0.52	2	5.2143	0.00000	CAPGEAR	≥ 0.5509	1.17	1.09%	52	134.10%	125.25%	1.1179	0.9859
0.52	3	5.895	0.00000	NOSHARES	≤ 113724	0.81	0.76%	46	167.50%	158.02%	1.0771	0.9902
0.52	4	5.6055	0.00000	POS_OP	≥ 16.0000	0.76	0.71%	42	170.83%	163.06%	1.0357	0.9811
0.52	5	5.4367	0.00000	POS_NET	≥ 18.0000	0.74	0.69%	40	164.94%	165.39%	0.9244	0.9317
0.52	6	5.1317	0.00000	PRETAX_PM	≤ -0.1054	0.62	0.58%	36	158.53%	182.59%	0.6901	0.8087
0.52	7	5.0382	0.00000	ACCITA	≤ 0.0884	0.62	0.58%	35	158.80%	182.59%	0.6824	0.8100
0.52	8	4.7673	0.00000	CH_ASSTURN(-12m)	≥ -0.3121	0.58	0.54%	32	156.69%	191.15%	0.5973	0.7615
0.52	9	4.4539	0.00000	CH_TA	≤ -0.0718	0.48	0.45%	27	174.35%	168.92%	0.9330	0.9670
0.52	10	4.1975	0.00000	MTB	≤ 1.6700	0.39	0.37%	21	204.29%	109.83%	2.9854	1.7642
0.52	11	4.1	0.00000	CH_INVITA(-12m)	≥ -0.0248	0.38	0.36%	20	203.12%	97.25%	3.7115	1.9801
0.52	12	3.5711	0.00020	CH_ASSTURN(-6m)	≥ -0.1623	0.33	0.31%	16	225.69%	87.16%	5.6262	2.4681
0.52	13	3.209	0.00065	CH_SALES(-9m)	≥ -0.2144	0.31	0.29%	13	211.43%	90.51%	4.5159	2.2179
0.52	14	2.9352	0.00165	SDEV_VOL(-6m)	≥ -0.9470	0.29	0.27%	11	200.61%	76.70%	5.5871	2.4755
0.52	15	2.4879	0.00645	EARNG_24(-9m)	≥ -0.1156	0.27	0.25%	8	206.38%	79.00%	5.4987	2.4805
0.52	16	1.278	0.10060	MOM_3(-6m)	≥ -0.2988	0.24	0.23%	3	115.59%	77.20%	1.7824	1.3654
0.52	17	0.8018	0.21135	MOM_6(-6m)	≥ -0.3419	0.24	0.23%	2	94.12%	72.52%	1.3223	1.1571
0.53	1	0.1943	0.42300	OPINCITA	≤ -0.0455	4.57	4.27%	111	70.96%	53.78%	1.7597	1.1113
0.53	2	5.1179	0.00000	CAPGEAR	≥ 0.5509	1.17	1.09%	52	134.10%	125.25%	1.1179	0.9859
0.53	3	5.8348	0.00000	NOSHARES	≤ 113724	0.81	0.76%	46	167.50%	158.02%	1.0771	0.9902
0.53	4	5.5435	0.00000	POS_OP	≥ 16.0000	0.76	0.71%	42	170.83%	163.06%	1.0357	0.9811
0.53	5	5.3714	0.00000	POS_NET	≥ 18.0000	0.74	0.69%	40	164.94%	165.39%	0.9244	0.9317
0.53	6	5.0589	0.00000	PRETAX_PM	≤ -0.1054	0.62	0.58%	36	158.53%	182.59%	0.6901	0.8087
0.53	7	4.9726	0.00000	ACCITA	≤ 0.0884	0.62	0.58%	35	158.80%	182.59%	0.6824	0.8100
0.53	8	4.7038	0.00000	CH_ASSTURN(-12m)	≥ -0.3121	0.58	0.54%	32	156.69%	191.15%	0.5973	0.7615
0.53	9	4.4225	0.00000	CH_TA	≤ -0.0718	0.48	0.45%	27	174.35%	168.92%	0.9330	0.9670
0.53	10	4.1975	0.00000	MTB	≤ 1.6700	0.39	0.37%	21	204.29%	109.83%	2.9854	1.7642
0.53	11	4.1	0.00000	CH_INVITA(-12m)	≥ -0.0248	0.38	0.36%	20	203.12%	97.25%	3.7115	1.9801
0.53	12	3.5711	0.00020	CH_ASSTURN(-6m)	≥ -0.1623	0.33	0.31%	16	225.69%	87.16%	5.6262	2.4681
0.53	13	3.209	0.00065	CH_SALES(-9m)	≥ -0.2144	0.31	0.29%	13	211.43%	90.51%	4.5159	2.2179
0.53	14	2.9352	0.00165	SDEV_VOL(-6m)	≥ -0.9470	0.29	0.27%	11	200.61%	76.70%	5.5871	2.4755
0.53	15	2.4879	0.00645	EARNG_24(-9m)	≥ -0.1156	0.27	0.25%	8	206.38%	79.00%	5.4987	2.4805
0.53	16	1.278	0.10060	MOM_3(-6m)	≥ -0.2988	0.24	0.23%	3	115.59%	77.20%	1.7824	1.3654
0.53	17	0.8018	0.21135	MOM_6(-6m)	≥ -0.3419	0.24	0.23%	2	94.12%	72.52%	1.3223	1.1571
0.54	1	0.0633	0.47475	OPINCITA	≤ -0.0455	4.57	4.27%	111	70.96%	53.78%	1.7597	1.1113
0.54	2	5.0828	0.00000	CAPGEAR	≥ 0.5509	1.17	1.09%	52	134.10%	125.25%	1.1179	0.9859
0.54	3	5.8348	0.00000	NOSHARES	≤ 113724	0.81	0.76%	46	167.50%	158.02%	1.0771	0.9902
0.54	4	5.5435	0.00000	POS_OP	≥ 16.0000	0.76	0.71%	42	170.83%	163.06%	1.0357	0.9811
0.54	5	5.3714	0.00000	POS_NET	≥ 18.0000	0.74	0.69%	40	164.94%	165.39%	0.9244	0.9317
0.54	6	5.0589	0.00000	PRETAX_PM	≤ -0.1054	0.62	0.58%	36	158.53%	182.59%	0.6901	0.8087
0.54	7	4.9726	0.00000	ACCITA	≤ 0.0884	0.62	0.58%	35	158.80%	182.59%	0.6824	0.8100
0.54	8	4.7038	0.00000	CH_ASSTURN(-12m)	≥ -0.3121	0.58	0.54%	32	156.69%	191.15%	0.5973	0.7615
0.54	9	4.4225	0.00000	CH_TA	≤ -0.0718	0.48	0.45%	27	174.35%	168.92%	0.9330	0.9670
0.54	10	4.1975	0.00000	MTB	≤ 1.6700	0.39	0.37%	21	204.29%	109.83%	2.9854	1.7642
0.54	11	4.1	0.00000	CH_INVITA(-12m)	≥ -0.0248	0.38	0.36%	20	203.12%	97.25%	3.7115	1.9801
0.54	12	3.5711	0.00020	CH_ASSTURN(-6m)	≥ -0.1623	0.33	0.31%	16	225.69%	87.16%	5.6262	2.4681
0.54	13	3.209	0.00065	CH_SALES(-9m)	≥ -0.2144	0.31	0.29%	13	211.43%	90.51%	4.5159	2.2179
0.54	14	2.9352	0.00165	SDEV_VOL(-6m)	≥ -0.9470	0.29	0.27%	11	200.61%	76.70%	5.5871	2.4755
0.54	15	2.4879	0.00645	EARNG_24(-9m)	≥ -0.1156	0.27	0.25%	8	206.38%	79.00%	5.4987	2.4805
0.54	16	1.278	0.10060	MOM_3(-6m)	≥ -0.2988	0.24	0.23%	3	115.59%	77.20%	1.7824	1.3654
0.54	17	0.8018	0.21135	MOM_6(-6m)	≥ -0.3419	0.24	0.23%	2	94.12%	72.52%	1.3223	1.1571

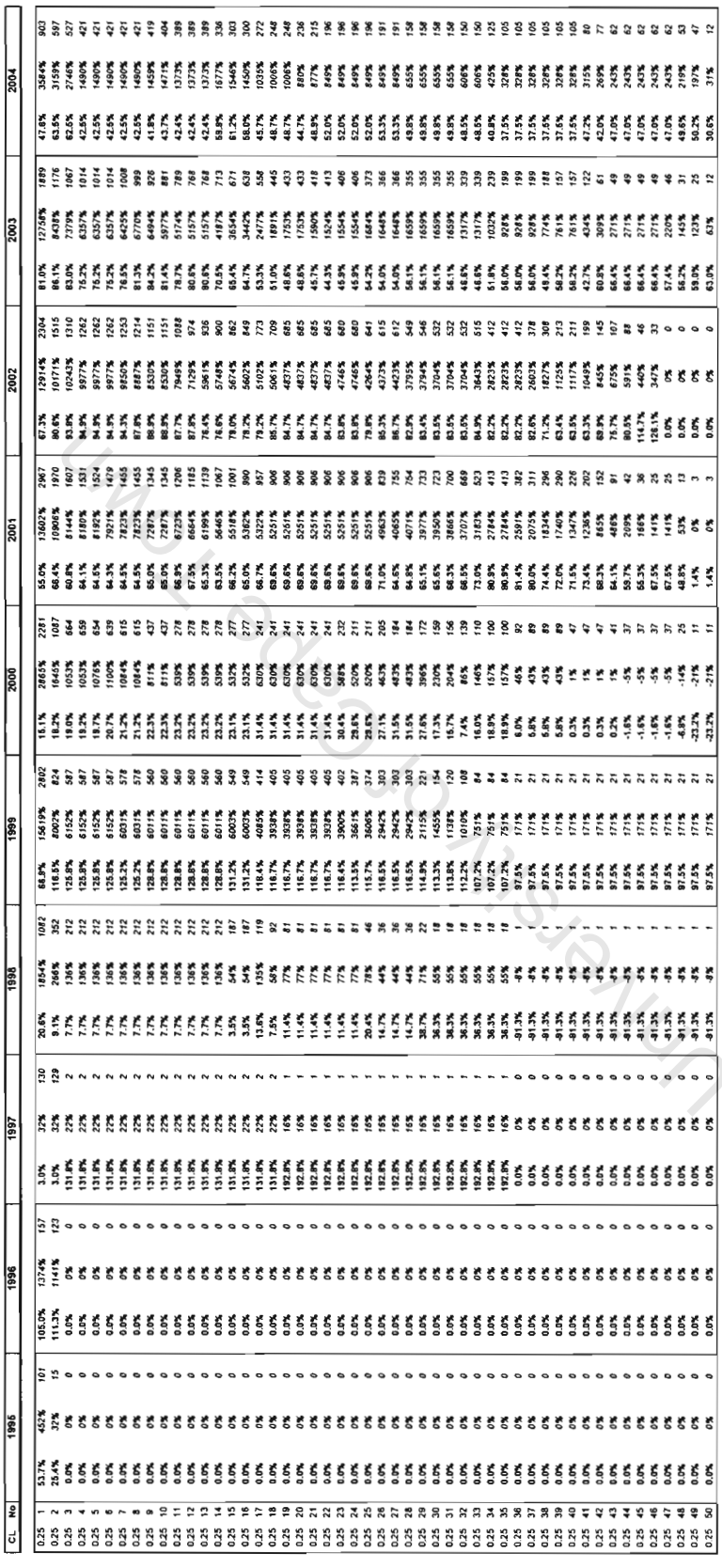
Appendix D.5. Calendar time payoffs for static comparison level tests

The tables below show the calendar time payoffs corresponding to the filters in Appendix D.4. over the entire sample period from January 1995 until December 2004. For each sample year the total return earned by the filtered shares (second column of each year), the number of investment months included in the filtered portfolio (third column of each year) and the corresponding equally-weighted average return for that year are included (first column of each year). Each line matches up to the corresponding filter in Appendix D.4. with the same comparison level and number of filters.



Appendix D.5. Calendar time payoffs for static comparison level tests

Continued: Comparison level = 25 percent



Appendix D.5. Calendar time payoffs for static comparison level tests

Continued: Comparison level = 30 percent

CL	No	1995			1996			1997			1998			1999			2000			2001			2002			2003			2004		
0.3	1	53.7%	452%	101	105.0%	1374%	157	3.0%	32%	130	20.8%	1854%	1082	66.9%	15619%	2802	15.1%	2865%	2281	55.0%	13602%	2967	67.3%	12914%	2304	81.0%	12758%	1889	47.6%	3584%	903
0.3	2	25.4%	32%	15	111.3%	1141%	123	3.0%	32%	129	9.1%	266%	352	116.5%	8002%	824	18.2%	1645%	1087	68.4%	10906%	1970	90.6%	10171%	1515	86.1%	8438%	1176	63.5%	3159%	597
0.3	3	0.0%	0%	0	0.0%	0%	0	131.8%	22%	2	7.7%	136%	212	125.8%	6152%	587	19.0%	1053%	664	60.8%	8144%	1607	93.8%	10243%	1310	83.0%	7379%	1067	62.5%	2746%	527
0.3	4	0.0%	0%	0	0.0%	0%	0	131.8%	22%	2	7.7%	136%	212	125.8%	6152%	587	19.2%	1053%	659	64.1%	8180%	1531	94.9%	9977%	1262	75.2%	6357%	1014	42.5%	1490%	421
0.3	5	0.0%	0%	0	0.0%	0%	0	131.8%	22%	2	7.7%	136%	212	125.8%	6152%	587	19.7%	1076%	654	64.5%	8192%	1524	94.9%	9977%	1262	75.2%	6357%	1014	42.5%	1490%	421
0.3	6	0.0%	0%	0	0.0%	0%	0	131.8%	22%	2	7.7%	136%	212	129.3%	6132%	569	20.2%	803%	476	65.0%	7657%	1414	91.3%	8961%	1178	80.9%	6322%	938	41.8%	1459%	419
0.3	7	0.0%	0%	0	0.0%	0%	0	131.8%	22%	2	7.7%	136%	212	129.3%	6132%	569	20.2%	803%	476	65.0%	7657%	1414	89.5%	8656%	1160	82.7%	6426%	932	41.8%	1459%	419
0.3	8	0.0%	0%	0	0.0%	0%	0	131.8%	22%	2	7.7%	136%	212	129.3%	6132%	569	21.5%	827%	461	64.7%	7386%	1369	89.5%	8656%	1160	82.7%	6426%	932	41.8%	1459%	419
0.3	9	0.0%	0%	0	0.0%	0%	0	131.8%	22%	2	7.7%	136%	212	128.8%	6011%	560	22.3%	811%	437	65.0%	7287%	1345	88.9%	8530%	1151	84.2%	6494%	926	41.8%	1459%	419
0.3	10	0.0%	0%	0	0.0%	0%	0	131.8%	22%	2	7.7%	136%	212	128.8%	6011%	560	22.3%	811%	437	65.0%	7287%	1345	88.9%	8530%	1151	81.4%	5977%	881	43.7%	1471%	404
0.3	11	0.0%	0%	0	0.0%	0%	0	131.8%	22%	2	7.7%	136%	212	128.8%	6011%	560	24.4%	546%	268	68.8%	6563%	1145	87.8%	7952%	1087	78.7%	5174%	789	41.5%	1305%	377
0.3	12	0.0%	0%	0	0.0%	0%	0	131.8%	22%	2	3.6%	48%	161	115.7%	4744%	492	25.8%	575%	268	72.6%	6277%	1037	93.7%	7783%	997	62.2%	2981%	575	56.7%	1408%	298
0.3	13	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	8.5%	93%	130	116.5%	4738%	488	25.9%	575%	268	72.6%	6277%	1037	95.0%	7207%	910	60.4%	2673%	531	56.9%	1408%	297
0.3	14	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	8.5%	93%	130	116.5%	4738%	488	26.9%	575%	268	72.6%	6277%	1037	95.0%	7207%	910	60.4%	2673%	531	54.0%	1282%	285
0.3	15	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	12.3%	93%	91	116.2%	3940%	407	33.1%	637%	231	72.5%	5845%	967	88.0%	6274%	856	57.0%	2429%	511	48.8%	1107%	272
0.3	16	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	12.3%	93%	91	116.2%	3940%	407	33.1%	637%	231	72.5%	5845%	967	88.0%	6274%	856	54.8%	2267%	496	52.8%	1104%	251
0.3	17	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	12.3%	93%	91	116.2%	3940%	407	33.1%	637%	231	72.5%	5845%	967	88.0%	6274%	856	53.8%	2200%	491	55.7%	1076%	232
0.3	18	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	12.3%	93%	91	113.0%	3663%	389	31.5%	527%	201	72.5%	5845%	967	88.0%	6274%	856	53.8%	2200%	491	55.7%	1076%	232
0.3	19	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	8.7%	59%	81	113.2%	3000%	318	29.0%	470%	195	73.8%	5508%	895	93.4%	6310%	811	53.6%	2163%	484	56.9%	1076%	227
0.3	20	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	30.5%	481%	189	73.1%	4828%	793	94.4%	6094%	775	53.6%	2163%	484	56.9%	1076%	227
0.3	21	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	30.5%	481%	189	74.1%	4770%	772	95.2%	5412%	682	54.5%	2172%	478	56.9%	1076%	227
0.3	22	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	30.5%	481%	189	74.0%	4718%	765	89.2%	4943%	665	54.5%	2172%	478	56.9%	1076%	227
0.3	23	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	30.5%	481%	189	74.0%	4718%	765	85.5%	4461%	626	62.1%	2302%	445	56.9%	1076%	227
0.3	24	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	30.5%	481%	189	72.1%	4165%	693	86.4%	4248%	590	62.1%	2302%	445	56.9%	1076%	227
0.3	25	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	30.5%	481%	189	73.2%	4123%	676	86.9%	4163%	575	62.9%	1720%	328	60.6%	930%	184
0.3	26	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	30.0%	460%	184	75.1%	4069%	650	86.7%	4120%	570	62.9%	1720%	328	60.6%	930%	184
0.3	27	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	30.0%	460%	184	75.1%	4069%	650	86.7%	4120%	570	61.4%	1508%	295	55.3%	834%	181
0.3	28	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	30.0%	460%	184	75.1%	4069%	650	86.1%	4003%	558	86.2%	1495%	271	55.3%	834%	181
0.3	29	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	30.0%	460%	184	75.4%	4075%	649	81.8%	3374%	495	69.5%	1506%	260	51.9%	640%	148
0.3	30	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	28.2%	445%	183	75.9%	4037%	638	77.2%	2643%	411	91.5%	1243%	163	40.1%	377%	113
0.3	31	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	116.5%	2942%	303	25.4%	328%	155	87.5%	3193%	438	83.3%	2438%	351	91.5%	1243%	163	40.1%	377%	113
0.3	32	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	115.4%	2683%	279	35.9%	427%	143	88.6%	3152%	427	85.1%	2398%	338	91.5%	1243%	163	40.1%	377%	113
0.3	33	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	103.0%	1906%	222	31.7%	338%	128	88.6%	3152%	427	85.1%	2398%	338	73.5%	901%	147	37.5%	328%	105
0.3	34	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-7.8%	-16%	25	108.1%	1327%	150	13.1%	126%	115	86.2%	2987%	416	85.1%	2398%	338	73.5%	901%	147	37.5%	328%	105
0.3	35	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-27.2%	-41%	18	105.2%	1166%	133	13.1%	126%	115	84.9%	2857%	404	85.1%	2398%	338	73.5%	901%	147	37.5%	328%	105
0.3	36	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-10.2%	-6%	7	107.2%	751%	84	13.1%	126%	115	86.4%	2758%	383	86.6%	2418%	335	73.5%	901%	147	37.5%	328%	105
0.3	37	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-10.2%	-6%	7	107.2%	751%	84	13.1%	126%	115	82.1%	2517%	368	74.3%	1641%	265	65.9%	747%	136	37.5%	328%	105
0.3	38	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-10.2%	-6%	7	107.2%	751%	84	13.1%	126%	115	80.3%	2423%	362	68.3%	940%	170	83.8%	734%	105	37.5%	328%	105
0.3	39	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-10.2%	-6%	7	107.2%	751%	84	8.8%	51%	70	81.5%	1882%	277	66.6%	932%	168	83.8%	734%	105	37.5%	328%	105
0.3	40	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-91.3%	-8%	1	109.7%	603%	66	8.8%	51%	70	81.5%	1882%	277	66.6%	932%	168	83.8%	734%	105	37.5%	328%	105
0.3	41	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-91.3%	-8%	1	97.5%	171%	21	-4.7%	-19%	49	74.4%	1463%	236	68.9%	958%	167	83.8%	734%	105	37.5%	328%	105
0.3	42	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-91.3%	-8%	1	97.5%	171%	21	-4.7%	-19%	49	76.5%	1352%	212	68.9%	890%	155	69.7%	406%	70	47.2%	315%	80
0.3	43	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-91.3%	-8%	1	97.5%	171%	21	-4.7%	-19%	49	72.7%	981%	162	68.9%	845%	145	60.8%	309%	61	42.0%	269%	77
0.3	44	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-91.3%	-8%	1	97.5%	171%	21	-38.3%	-41%	13	77.6%	588%	91	68.4%	752%	132	60.8%	309%	61	42.0%	269%	77
0.3	45	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-91.3%	-8%	1	97.5%	171%	21	-38.3%	-41%	13	75.9%	367%	58	67.1%	722%	129	60.8%	309%	61	42.0%	269%	77
0.3	46	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-91.3%	-8%	1	106.2%	97%	11	-16.4%	-15%	11	75.9%	367%	58	67.1%	722%	129	60.8%	309%	61	42.0%	269%	77
0.3	47	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-91.3%	-8%	1	106.2%	97%	11	-16.4%	-15%	11	100.5%	159%	19	70.7%	566%	96	60.8%	309%	61	42.0%	269%	77
0.3	48	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-91.3%	-8%	1	106.2%	97%	11	-29.4%	-12%	5	90.6%	53%	7	92.1%	415%	54	62.2%	249%	48	29.5%	103%	42

Appendix D.5. Calendar time payoffs for static comparison level tests

Continued: Comparison level = 35 percent

CL	No	1995			1996			1997			1998			1999			2000			2001			2002			2003			2004		
0.35	1	53.7%	452%	101	105.0%	1374%	157	3.0%	32%	130	20.6%	1854%	1082	66.9%	15619%	2802	15.1%	2865%	2281	56.0%	13602%	2967	67.3%	12914%	2304	81.0%	12758%	1889	47.6%	3584%	903
0.35	2	26.4%	32%	15	111.3%	1141%	123	3.0%	32%	129	9.1%	266%	352	116.5%	8002%	824	18.2%	1645%	1087	68.4%	10906%	1970	90.6%	10171%	1515	86.1%	8438%	1176	63.5%	3159%	597
0.35	3	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	13.2%	159%	144	116.6%	5539%	570	29.9%	1641%	658	61.8%	7530%	1463	97.5%	9222%	1135	83.2%	6636%	957	58.0%	2744%	568
0.35	4	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	13.2%	159%	144	116.6%	5539%	570	33.8%	1753%	623	64.0%	7669%	1438	97.5%	9222%	1135	83.2%	6636%	957	58.0%	2744%	568
0.35	5	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	18.2%	159%	105	116.4%	4741%	489	38.4%	1833%	573	62.5%	7026%	1348	92.3%	8216%	1068	73.3%	5525%	904	72.9%	3061%	504
0.35	6	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-0.3%	-2%	67	121.5%	4729%	467	44.6%	1131%	304	67.5%	6016%	1070	95.0%	7168%	905	64.7%	3670%	681	92.7%	2758%	357
0.35	7	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-0.3%	-2%	67	121.5%	4729%	467	48.4%	1161%	288	71.8%	5662%	946	88.2%	6356%	865	68.5%	3398%	595	95.4%	2757%	347
0.35	8	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-0.3%	-2%	67	121.5%	4729%	467	48.4%	1161%	288	71.8%	5662%	946	87.4%	6235%	856	69.0%	3402%	592	95.4%	2757%	347
0.35	9	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-0.3%	-2%	67	121.5%	4729%	467	48.4%	1161%	288	71.8%	5662%	946	87.4%	6235%	856	69.0%	3402%	592	94.3%	2631%	335
0.35	10	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-0.3%	-2%	67	121.5%	4729%	467	48.4%	1161%	288	71.8%	5662%	946	86.6%	6144%	851	70.4%	3432%	585	94.3%	2631%	335
0.35	11	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-0.3%	-2%	67	120.7%	4607%	458	52.0%	1182%	273	71.8%	5662%	946	86.6%	6144%	851	70.4%	3432%	585	94.3%	2631%	335
0.35	12	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-0.3%	-2%	67	120.7%	4607%	458	52.0%	1182%	273	72.1%	5629%	937	87.1%	6153%	848	71.1%	3432%	579	43.3%	1057%	293
0.35	13	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-0.3%	-2%	67	120.7%	4607%	458	52.0%	1182%	273	72.1%	5629%	937	87.1%	6153%	848	69.6%	3270%	564	46.5%	1054%	272
0.35	14	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-0.3%	-2%	67	120.7%	4607%	458	52.0%	1182%	273	72.1%	5629%	937	87.1%	6153%	848	68.8%	3203%	559	48.7%	1026%	253
0.35	15	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-0.3%	-2%	67	118.1%	4330%	440	52.9%	1072%	243	72.1%	5629%	937	87.1%	6153%	848	68.8%	3203%	559	48.7%	1026%	253
0.35	16	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-2.6%	-13%	58	119.6%	4116%	413	52.9%	1072%	243	72.1%	5629%	937	87.1%	6153%	848	67.0%	3003%	538	51.1%	1064%	250
0.35	17	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-2.6%	-13%	58	119.6%	4116%	413	52.9%	1072%	243	72.1%	5629%	937	87.1%	6153%	848	62.7%	2686%	514	52.4%	1039%	238
0.35	18	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-11.7%	-47%	48	121.1%	3453%	342	51.4%	1015%	237	73.4%	5292%	865	92.5%	6189%	803	62.7%	2649%	507	53.5%	1039%	233
0.35	19	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-11.7%	-47%	48	121.1%	3453%	342	50.9%	979%	231	73.9%	4834%	785	93.0%	6143%	793	62.7%	2649%	507	53.5%	1039%	233
0.35	20	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-11.7%	-47%	48	121.1%	3453%	342	50.9%	979%	231	73.9%	4834%	785	93.0%	6143%	793	59.0%	2322%	472	59.1%	1025%	208
0.35	21	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-11.7%	-47%	48	121.1%	3453%	342	50.9%	979%	231	74.3%	4583%	740	103.1%	5609%	653	66.3%	2304%	417	59.1%	1025%	208
0.35	22	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-11.7%	-47%	48	121.1%	3453%	342	50.9%	979%	231	75.5%	4525%	719	105.8%	4927%	560	67.5%	2313%	411	59.1%	1025%	208
0.35	23	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-11.7%	-47%	48	121.1%	3453%	342	50.9%	979%	231	75.4%	4473%	712	98.5%	4458%	543	67.5%	2313%	411	59.1%	1025%	208
0.35	24	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	-11.7%	-47%	48	121.1%	3453%	342	50.9%	979%	231	75.4%	4473%	712	94.7%	3976%	504	77.6%	2443%	378	59.1%	1025%	208
0.35	25	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	1.7%	4%	30	129.2%	2131%	198	46.0%	808%	211	75.8%	4206%	666	96.0%	3935%	492	74.9%	2304%	369	59.8%	1022%	205
0.35	26	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	5.3%	9%	20	126.3%	1305%	124	52.1%	864%	199	74.7%	3992%	641	97.1%	3892%	481	74.9%	2304%	369	59.8%	1022%	205
0.35	27	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	52.9%	53%	12	119.7%	688%	69	55.4%	877%	190	75.4%	3893%	620	98.2%	3912%	478	74.9%	2304%	369	59.8%	1022%	205
0.35	28	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	52.9%	53%	12	119.7%	688%	69	55.4%	877%	190	73.4%	3491%	571	101.5%	3722%	440	78.4%	1692%	259	64.9%	876%	162
0.35	29	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	52.9%	53%	12	119.7%	688%	69	55.4%	877%	190	73.1%	3340%	548	101.2%	3702%	439	78.4%	1692%	259	64.9%	876%	162
0.35	30	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	52.9%	53%	12	119.7%	688%	69	52.7%	807%	184	73.1%	3157%	518	101.2%	3702%	439	78.4%	1692%	259	64.9%	876%	162
0.35	31	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	52.9%	53%	12	119.7%	688%	69	52.7%	807%	184	73.1%	3157%	518	101.2%	3702%	439	78.6%	1480%	226	58.8%	780%	159
0.35	32	0.0%	0%	0	0.0%	0%	0	192.8%	16%	1	52.9%	53%	12	119.7%	688%	69	52.7%	807%	184	73.1%	3157%	518	101.2%	3702%	439	68.1%	1163%	205	63.1%	820%	156
0.35	33	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-81.3%	-8%	1	119.7%	688%	69	52.7%	807%	184	73.1%	3157%	518	101.2%	3702%	439	69.6%	1027%	177	49.6%	364%	88
0.35	34	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-81.3%	-8%	1	119.7%	688%	69	44.9%	633%	169	73.3%	2969%	486	102.0%	3664%	431	75.6%	1008%	160	49.6%	364%	88
0.35	35	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-81.3%	-8%	1	119.7%	688%	69	44.9%	633%	169	73.3%	2969%	486	94.5%	3040%	386	82.2%	911%	133	49.6%	364%	88
0.35	36	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-81.3%	-8%	1	119.7%	688%	69	44.9%	633%	169	73.6%	2975%	485	89.6%	2411%	323	88.8%	925%	125	49.6%	364%	88
0.35	37	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-81.3%	-8%	1	119.7%	688%	69	38.2%	427%	134	89.7%	2094%	280	100.6%	2206%	263	88.8%	925%	125	49.6%	364%	88
0.35	38	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-81.3%	-8%	1	114.3%	429%	45	51.7%	526%	122	91.5%	2074%	272	102.5%	2213%	259	88.8%	925%	125	49.6%	364%	88
0.35	39	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-81.3%	-8%	1	109.5%	301%	33	51.7%	526%	122	91.6%	2074%	272	102.5%	2213%	259	64.2%	583%	109	47.2%	315%	80
0.35	40	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-81.3%	-8%	1	109.5%	301%	33	5.1%	31%	72	92.1%	2011%	262	102.5%	2213%	259	64.2%	583%	109	47.2%	315%	80
0.35	41	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-81.3%	-8%	1	87.5%	171%	21	0.8%	4%	58	88.0%	1496%	204	102.5%	2213%	259	64.2%	583%	109	47.2%	315%	80
0.35	42	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	87.9%	73%	10	-28.6%	-38%	16	110.6%	967%	105	105.8%	2045%	232	64.2%	583%	109	47.2%	315%	80
0.35	43	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	87.9%	73%	10	-38.3%	-41%	13	159.3%	451%	34	110.6%	1825%	198	64.2%	583%	109	47.2%	315%	80
0.35	44	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	87.9%	73%	10	-38.3%	-41%	13	140.5%	281%	24	100.1%	1143%	137	58.8%	529%	108	47.2%	315%	80
0.35	45	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	87.9%	73%	10	-38.3%	-41%	13	133.3%	211%	19	100.3%	1086%	130	58.8%	529%	108	47.2%	315%	80
0.35	46	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	87.9%	73%	10	-38.3%	-41%	13	133.3%	211%	19	98.3%	1048%	128	52.5%	429%	98	47.2%	315%	80
0.35	47	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	87.9%	73%	10	-38.3%	-41%	13	133.3%	211%	19	98.3%	1048%	128	44.7%	332%	89	42.0%	269%	77
0.35	48	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-16.4%	-15%	11	133.3%	211%	19	88.8%	702%	95	39.2%	281%	86	42.0%	269%	77
0.35	49	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-16.4%	-15%	11	125.3%	157%	15	91.8%	291%	38	37.5%	187%	60	43.3%	246%	68
0.35	50	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-16.4%	-15%	11	125.3%	157%	15	89.7%	105%	14	58.0%	196%	42	43.2%	223%	62
0.35	51	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-16.4%	-15%	11	107.3%	116%	13	0.0%	0%	0	60.1%	170%	34	43.2%	223%	62
0.35	52	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-16.4%	-15%	11	107.3%	116%	13	0.0%	0%	0	64.8%	130%	24	44.5%	223%	60
0.35	53	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	-16.4%	-15%	11	107.3%	116%	13	0.0%	0%	0	62.7%	115%	22	41.9%	174%	50
0.35	54	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	62.7%	115%	22	41.9%	174%	50
0.35	55	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	0.0%	0%	0	63.0%	110%	21	25.4%	57%	27

Appendix D.5. Calendar time payoffs for static comparison level tests

Continued: Comparison level =40 and 45 percent

Appendix D.6. Number of observations for winner signals

The table below shows the number of observations for each of the significant winner signals in each of the ten years of the sample. The highlighted cells show those years in which a variable has less than half the maximum observations (less than 642 observations).

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
MTB	362	372	444	988	1106	1161	1173	1182	1190	1212	9190
NOSHARES	813	876	942	1064	1163	1200	1208	1229	1245	1272	11012
SDEV_VOL	417	621	774	916	1010	1027	1015	953	1051	1145	8929
OPINCITA	355	360	396	740	1064	1082	1137	1170	1180	1195	8679
PRETAX_PM	355	360	389	720	1046	1090	1128	1162	1180	1195	8625
SALESICASH	355	360	389	717	1033	1047	1087	1084	1162	1183	8417
CAPGEAR	367	372	408	759	1105	1127	1163	1175	1180	1195	8851
CH_DEP	264	271	283	312	645	980	1010	1041	1056	1076	6938
CH_INVITA	336	343	348	360	660	930	968	1022	1033	1048	7048
GFORECAST_12	393	467	530	635	776	815	761	715	639	630	6367
ROE	360	354	380	412	746	1073	1121	1156	1170	1166	7938
CH_TA	360	367	372	404	735	1070	1108	1162	1175	1180	7933
ROA	367	372	408	759	1100	1124	1159	1164	1169	1181	8803
CH_QUICK	324	331	336	337	617	865	913	965	987	995	6670
EARNG_60	340	348	367	541	348	354	360	396	722	1080	4856
ACCITA	367	372	408	759	1105	1138	1164	1168	1175	1195	8851
CH_ARISALES	324	331	336	345	633	869	900	993	1020	1048	6799
REVISION_24	150	219	386	474	528	724	802	786	720	666	5455
REVISION_12	364	380	470	507	638	777	837	822	757	691	6243
EARNG_12	348	357	372	408	727	1077	1136	1143	1142	1171	7881
GM	319	331	344	432	548	656	569	623	860	944	5626
CH_ASSTURN	348	355	360	389	693	992	1064	1117	1162	1180	7660
DY	797	861	934	1062	1175	1212	1221	1241	1256	1276	11035
NTC	331	336	345	638	920	941	985	1008	1036	1051	7591
POS_OP	355	360	389	713	1033	1074	1128	1162	1180	1195	8589
POS_NET	355	360	389	720	1047	1111	1130	1162	1180	1195	8649
POS_ROE	360	354	380	412	746	1073	1121	1156	1170	1173	7945
MOM_6(-3m)	775	836	902	975	1130	1206	1215	1223	1249	1269	10780
MOM_3(-6m)	795	850	918	1020	1153	1210	1217	1231	1251	1276	10921
MOM_6(-6m)	775	836	902	975	1130	1206	1215	1223	1249	1269	10780
SDEV_VOL(-6m)	417	621	774	916	1010	1027	1015	953	1051	1145	8929
CH_ASSTURN(-6m)	348	355	360	389	693	992	1064	1117	1162	1180	7660
CH_INVTURN(-6m)	312	319	324	332	575	794	832	899	941	947	6275
CH_TA(-6m)	360	367	372	404	735	1070	1108	1162	1175	1180	7933
EY(-9m)	793	848	918	1023	1154	1209	1202	1212	1226	1243	10828
SDEV_VOL(-9m)	417	621	774	916	1010	1027	1015	953	1051	1145	8929
MOM_3(-9m)	795	850	918	1020	1153	1210	1217	1231	1251	1276	10921
EARNG_24(-9m)	351	348	357	372	408	724	1074	1131	1130	1152	7047
DY(-9m)	797	861	934	1062	1175	1212	1221	1241	1256	1276	11035
CH_TA(-9m)	360	367	372	404	735	1070	1108	1162	1175	1180	7933
CH_SALES(-9m)	348	355	360	389	705	1018	1074	1117	1162	1180	7708
CH_DPS(-9m)	585	641	686	718	762	829	820	838	899	986	7764
ROE(-9m)	360	354	380	412	746	1073	1121	1156	1170	1166	7938
CH_INVISALES(-9m)	312	319	324	332	578	796	838	905	947	960	6311
EY(-12m)	793	848	918	1023	1154	1209	1202	1212	1226	1243	10828
SDEV_VOL(-12m)	417	621	774	916	1010	1027	1015	953	1051	1145	8929
EARNG_24(-12m)	351	348	357	372	408	724	1074	1131	1130	1152	7047
CH_ASSTURN(-12m)	348	355	360	389	693	992	1064	1117	1162	1180	7660
CH_DPS(-12m)	585	641	686	718	762	829	820	838	899	986	7764
ROE(-12m)	360	354	380	412	746	1073	1121	1156	1170	1166	7938
CH_INVTURN(-12m)	312	319	324	332	575	794	832	899	941	947	6275
CH_SALES(-12m)	348	355	360	389	705	1018	1074	1117	1162	1180	7708
OPINCITA(-12m)	355	360	396	740	1064	1082	1137	1170	1180	1195	8679
CH_TA(-12m)	360	367	372	404	735	1070	1108	1162	1175	1180	7933
DY(-12m)	797	861	934	1062	1175	1212	1221	1241	1256	1276	11035
CH_EBTISALES(-12m)	348	355	360	389	711	1017	1081	1127	1151	1180	7719
ROA(-12m)	367	372	408	759	1100	1124	1159	1164	1169	1181	8803
CH_DEP(-12m)	264	271	283	312	645	980	1010	1041	1056	1076	6938
GM(-12m)	319	331	344	432	548	656	569	623	860	944	5626
CH_INVITA(-12m)	336	343	348	360	660	930	968	1022	1033	1048	7048
POS_NET(-12m)	355	360	389	720	1047	1111	1130	1162	1180	1195	8649
POS_OP(-12m)	355	360	389	713	1033	1074	1128	1162	1180	1195	8589

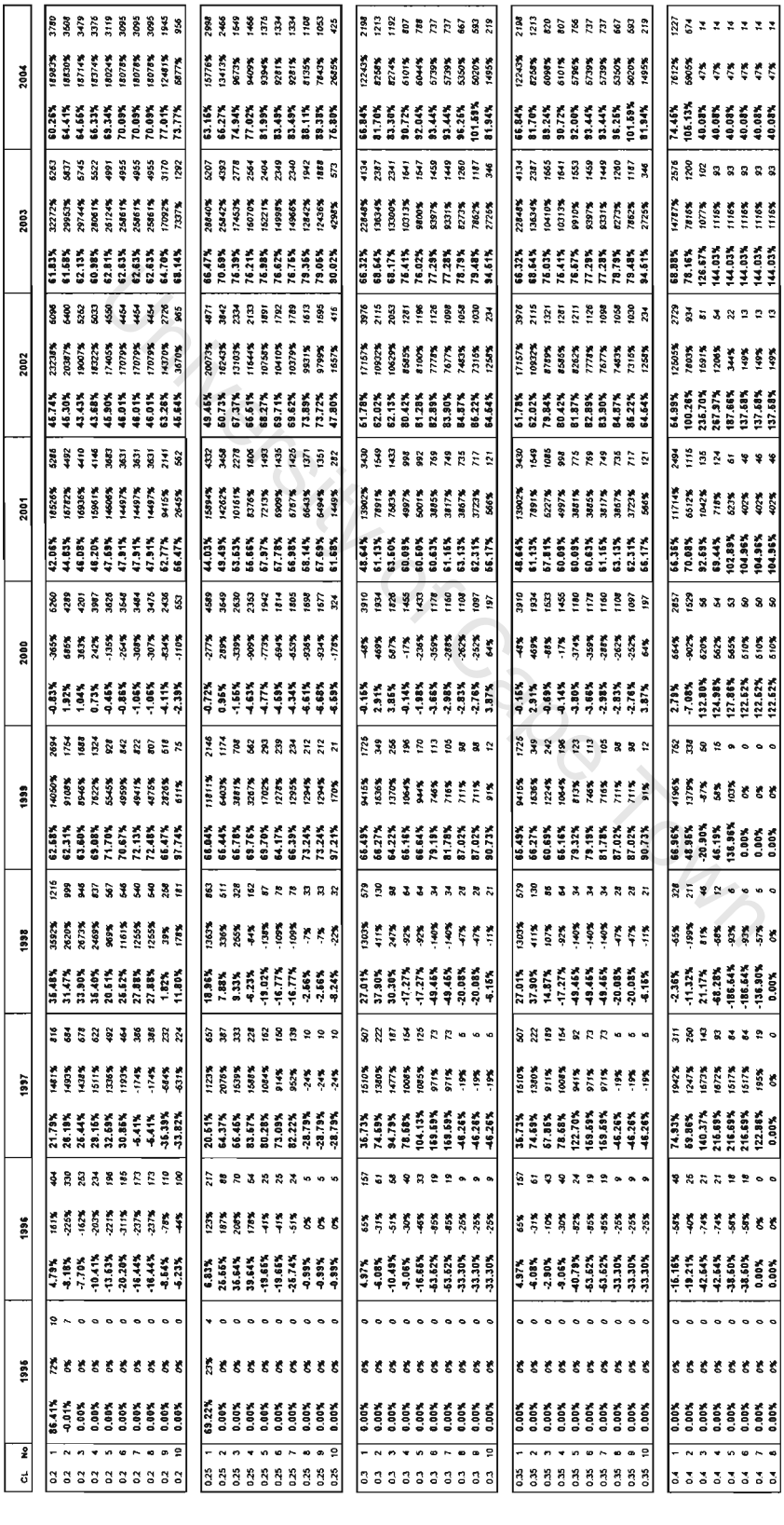
Appendix D.7. Results for static comparison level tests: reduced variables

The tables below show the results from the stepwise median comparison test where the variables considered have been restricted to those which have at least 642 in every year of the sample. Each table that follows provides the results from this test while using a particular static comparison level (ranging from 20 to 40 percent). The table shows the filtering variables and their corresponding filter levels as each subsequent filter is added. For example, filter number 3 in the table with CL = 20 percent below represents a filter of all shares in the insample where EY(-9m) ≥ 0.1346, MOM_3(-9m) ≥ -0.2761 and EY(-12m) ≥ 0.0449. For each combination of filters the z-statistic from the Wilcoxon signed ranks test comparing the median return of the filtered portfolio to the relevant comparison level along with its p-value is shown. The tables also show the average number of companies held in any month over the period from 1995 until 2004, and the amount of companies held as a proportion of the entire sample. The number of winners picked out of a possible 1104 insample winners is indicated. Finally, the tables show the average annual return and annualized standard deviation of monthly portfolio returns of each filtered portfolio over the period from January 1995 until December 2004 as well as the JK statistic and Sharpe ratio.

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.2	1	14.966	0.00000	EY(-9m)	≥ 0.1346	38.05	35.56%	382	42.24%	28.26%	2.6515	1.0922
0.2	2	15.475	0.00000	MOM_3(-9m)	≥ -0.2761	35.66	33.33%	335	43.79%	26.45%	3.1261	1.2282
0.2	3	15.725	0.00000	EY(-12m)	≥ 0.0449	34.51	32.25%	323	43.97%	26.54%	3.0708	1.2318
0.2	4	15.669	0.00000	MOM_3(-6m)	≥ -0.2988	33.22	31.04%	295	44.19%	25.88%	3.1854	1.2742
0.2	5	15.758	0.00000	MOM_6(-3m)	≥ -0.1964	31.98	29.88%	270	45.32%	22.36%	4.3459	1.5306
0.2	6	15.767	0.00000	MOM_6(-6m)	≥ -0.3419	31.42	29.36%	263	45.45%	21.90%	4.4800	1.5700
0.2	7	15.604	0.00000	DY(-12m)	≥ -0.0079	31.23	29.18%	257	45.12%	22.24%	4.2160	1.5323
0.2	8	15.591	0.00000	DY(-9m)	≥ -0.0122	31.19	29.15%	257	45.13%	22.22%	4.1639	1.5341
0.2	9	14.953	0.00000	NOSHARES	≤ 146056	19.51	18.23%	167	48.43%	24.31%	3.7690	1.5390
0.2	10	7.6375	0.00000	DY	≤ 0.0470	12.24	11.44%	74	47.76%	41.27%	1.1898	0.8862
0.25	1	11.005	0.00000	EY(-9m)	≥ 0.1533	32.75	30.61%	344	43.93%	30.52%	2.3819	1.0694
0.25	2	11.893	0.00000	EY(-12m)	≥ 0.1493	25.73	24.04%	291	47.51%	31.44%	2.4986	1.1578
0.25	3	12.242	0.00000	NOSHARES	≤ 146056	16.08	15.02%	191	51.60%	36.18%	2.1044	1.1194
0.25	4	12.355	0.00000	MOM_6(-3m)	≥ -0.1964	15.60	14.58%	165	52.48%	34.61%	2.3182	1.1987
0.25	5	12.631	0.00000	MOM_6(-6m)	≥ -0.1785	14.63	13.67%	151	55.11%	28.98%	3.5561	1.5261
0.25	6	12.923	0.00000	MOM_3(-9m)	≥ -0.2131	13.97	13.05%	144	55.92%	28.59%	3.6974	1.5765
0.25	7	12.978	0.00000	MOM_3(-6m)	≥ -0.2988	13.81	12.90%	143	56.06%	29.09%	3.5353	1.5543
0.25	8	12.881	0.00000	DY(-9m)	≥ 0.0369	11.62	10.86%	118	56.87%	28.63%	3.6773	1.6122
0.25	9	12.746	0.00000	DY(-12m)	≥ 0.0229	11.31	10.57%	116	56.60%	28.69%	3.5700	1.5982
0.25	10	6.3884	0.00000	DY	≤ 0.0470	5.38	5.03%	37	57.67%	28.55%	3.5614	1.6480
0.3	1	7.3067	0.00000	EY(-9m)	≥ 0.1720	28.95	27.06%	293	45.63%	25.55%	3.5581	1.3443
0.3	2	8.6482	0.00000	MOM_3(-9m)	≥ -0.0242	20.29	18.96%	170	53.71%	32.11%	2.8864	1.3280
0.3	3	9.146	0.00000	MOM_3(-6m)	≥ -0.2988	19.20	17.94%	161	55.17%	30.28%	3.3596	1.4577
0.3	4	9.419	0.00000	NOSHARES	≤ 146056	12.43	11.61%	113	57.74%	33.41%	2.9263	1.3984
0.3	5	9.5099	0.00000	EY(-12m)	≥ 0.1232	11.95	11.17%	106	57.85%	36.49%	2.4217	1.2850
0.3	6	9.6337	0.00000	MOM_6(-3m)	≥ -0.1438	10.93	10.22%	101	60.85%	38.84%	2.3182	1.2861
0.3	7	9.7131	0.00000	MOM_6(-6m)	≥ -0.1785	10.68	9.98%	100	61.37%	38.79%	2.3278	1.3009
0.3	8	9.5915	0.00000	DY(-9m)	≥ 0.0018	9.55	8.93%	87	61.18%	29.66%	3.8907	1.6981
0.3	9	9.5149	0.00000	DY(-12m)	≥ 0.0229	9.17	8.57%	85	61.18%	29.97%	3.7500	1.6790
0.3	10	4.7928	0.00000	DY	≤ 0.0470	3.88	3.63%	26	63.35%	31.25%	3.5647	1.6820
0.35	1	3.9484	0.00005	EY(-9m)	≥ 0.1720	28.95	27.06%	293	45.63%	25.55%	3.5581	1.3443
0.35	2	6.4599	0.00000	MOM_3(-9m)	≥ -0.0242	20.29	18.96%	170	53.71%	32.11%	2.8864	1.3280
0.35	3	7.0331	0.00000	NOSHARES	≤ 146056	13.13	12.27%	119	56.13%	35.70%	2.4646	1.2623
0.35	4	7.6127	0.00000	MOM_3(-6m)	≥ -0.2988	12.43	11.61%	113	57.74%	33.41%	2.9263	1.3984
0.35	5	7.8654	0.00000	MOM_6(-3m)	≥ -0.1438	11.33	10.58%	106	60.56%	33.60%	3.1175	1.4762
0.35	6	8.0648	0.00000	EY(-12m)	≥ 0.1232	10.93	10.22%	101	60.85%	38.84%	2.3182	1.2861
0.35	7	8.1584	0.00000	MOM_6(-6m)	≥ -0.1785	10.68	9.98%	100	61.37%	38.79%	2.3278	1.3009
0.35	8	8.0727	0.00000	DY(-9m)	≥ 0.0018	9.55	8.93%	87	61.18%	29.66%	3.8907	1.6981
0.35	9	8.0484	0.00000	DY(-12m)	≥ 0.0229	9.17	8.57%	85	61.18%	29.97%	3.7500	1.6790
0.35	10	4.1668	0.00000	DY	≤ 0.0470	3.88	3.63%	26	63.35%	31.25%	3.5647	1.6820
0.4	1	0.8614	0.19450	EY(-12m)	≥ 0.2015	21.01	19.63%	219	48.02%	28.21%	3.0970	1.3042
0.4	2	3.7764	0.0001	NOSHARES	≤ 81392	9.51	8.89%	120	56.45%	34.89%	2.6391	1.2975
0.4	3	4.6753	0	DY	≤ 0.0036	1.60	1.50%	30	110.52%	64.13%	2.8453	1.5208
0.4	4	4.9531	0	EY(-9m)	≥ 0.1533	1.18	1.10%	27	130.89%	71.45%	3.1625	1.6585
0.4	5	4.525	0	MOM_6(-6m)	≥ -0.3419	1.06	0.99%	22	135.44%	64.92%	4.0377	1.8922
0.4	6	4.2404	0	MOM_3(-9m)	≥ -0.2761	0.88	0.82%	19	132.99%	63.17%	4.0492	1.9027
0.4	7	3.4533	0.0003	DY(-9m)	≥ -0.0122	0.81	0.76%	12	118.12%	56.38%	3.9496	1.8906
0.4	8	3.2663	0.00055	DY(-12m)	≥ -0.0079	0.70	0.65%	12	123.60%	38.41%	9.1844	2.9305

Appendix D.8. Calendar time payoffs for static comparison level tests: Reduced variables

The tables below show the calendar time payoffs corresponding to the filters in Appendix D.7. over the entire sample period from January 1995 until December 2004. For each sample year the total return earned by the filtered shares (second column of each year), the number of investment months included in the filtered portfolio (third column of each year) and the corresponding equally-weighted average return for that year are included (first column of each year). Each line matches up to the corresponding filter in Appendix D.7. with the same comparison level and number of filters.



Appendix D.9. Results for static comparison level tests: restricted sample

The tables below show the results from the stepwise median comparison test where the sample has been restricted to the period from 2000 until 2004. Each table that follows provides the results from this test while using a particular static comparison level (ranging from 20 to 50 percent). The table shows the filtering variables and their corresponding filter levels as each subsequent filter is added. For example, filter number 3 in the table with CL = 20 percent below represents a filter of all shares in the insample where EY(-9m) $\geq$ 0.1158, CH_ARtSALES $\leq$ 0.3194 and CH_TA(-12m) $\leq$ 0.3696. For each combination of filters the z-statistic from the Wilcoxon signed ranks test comparing the median return of the filtered portfolio to the relevant comparison level along with its p-value is shown. The tables also show the average number of companies held in any month over the period from 2000 until 2004, and the amount of companies held as a proportion of the entire sample. The number of winners picked out of a possible 546 insample winners is indicated. Finally, the tables show the average annual return and annualized standard deviation of monthly portfolio returns of each filtered portfolio over the period from January 2000 until December 2004, as well as the JK statistic and Sharpe rato.

The tables below also show the calendar time payoffs corresponding to the each of these filters over the entire sample period from January 2000 until December 2004. For each sample year the total return earned by the filtered shares (second column of each year), the number of investment months included in the filtered portfolio (third column of each year) and the corresponding equally-weighted average return for that year are included (first column of each year).

Appendix D.9. Results for static comparison level tests: restricted sample

Continued: Comparison level = 20 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.2	1	17.75	0.0000	EY(-9m)	≥ 0.1158	65.07	60.81%	335	45.08%	14.63%	11.095	2.352
0.2	2	20.82	0.0000	CH_ARISALES	≤ 0.3194	52.95	49.49%	267	51.32%	14.89%	13.152	2.731
0.2	3	21.69	0.0000	CH_TA(-12m)	≤ 0.3696	40.67	38.01%	215	56.58%	15.33%	14.375	3.007
0.2	4	22.05	0.0000	ROE(-12m)	≥ -0.0956	38.90	36.36%	211	57.33%	15.43%	14.304	3.033
0.2	5	22.24	0.0000	POS_NET	≥ 2.0000	38.88	36.34%	211	57.69%	15.42%	14.270	3.057
0.2	6	22.40	0.0000	MTB	≤ 3.6700	37.98	35.50%	208	58.74%	15.48%	14.433	3.114
0.2	7	22.40	0.0000	EY(-12m)	≥ 0.0188	37.75	35.28%	208	58.83%	15.55%	14.124	3.104
0.2	8	22.26	0.0000	CH_TA(-9m)	≤ 0.3757	37.20	34.77%	205	59.16%	15.48%	14.189	3.141
0.2	9	22.11	0.0000	CH_SALES(-9m)	≥ -0.2144	35.77	33.43%	193	59.10%	15.27%	14.292	3.180
0.2	10	22.02	0.0000	CH_ASSTURN(-6m)	≥ -0.2930	35.30	32.99%	192	59.08%	15.32%	13.975	3.168
0.2	11	21.93	0.0000	CH_ASSTURN(-12m)	≥ -0.3121	35.02	32.73%	192	59.11%	15.35%	13.737	3.163
0.2	12	21.83	0.0000	CH_SALES(-12m)	≥ -0.2144	34.75	32.48%	192	59.08%	15.24%	13.726	3.183
0.2	13	21.64	0.0000	ROE(-9m)	≥ -0.0748	34.60	32.34%	189	58.57%	15.22%	13.335	3.153
0.2	14	21.45	0.0000	OPINCITA(-12m)	≥ -0.0148	34.07	31.84%	181	57.36%	15.05%	12.909	3.110
0.2	15	21.22	0.0000	MOM_3(-6m)	≥ -0.2988	34.03	31.81%	173	57.25%	14.95%	12.844	3.123
0.2	16	21.00	0.0000	MOM_6(-6m)	≥ -0.3419	33.67	31.46%	169	57.45%	14.70%	13.179	3.189
0.2	17	20.81	0.0000	MOM_3(-9m)	≥ -0.2761	33.27	31.09%	169	57.79%	14.62%	13.278	3.229
0.2	18	20.64	0.0000	OPINCITA	≤ 0.2886	31.88	29.80%	164	58.35%	14.80%	13.015	3.226
0.2	19	20.46	0.0000	MOM_6(-3m)	≥ -0.1964	31.23	29.19%	161	59.85%	15.09%	12.933	3.262
0.2	20	20.20	0.0000	CH_ASSTURN	≥ -0.1652	29.03	27.13%	159	61.68%	15.69%	12.482	3.256
0.2	21	19.96	0.0000	POS_ROE	≥ 3.0000	28.47	26.60%	156	61.84%	15.74%	12.291	3.255
0.2	22	19.65	0.0000	ROA(-12m)	≥ -0.0074	28.22	26.37%	153	61.89%	15.90%	11.902	3.226
0.2	23	19.25	0.0000	CH_TA(-6m)	≤ 0.3614	27.27	25.48%	147	61.74%	16.15%	11.332	3.167
0.2	24	18.85	0.0000	CH_DEP	≤ 0.5228	23.75	22.20%	142	66.17%	16.46%	12.284	3.372
0.2	25	18.58	0.0000	CH_TA	≤ 0.3777	23.30	21.78%	142	66.30%	16.55%	12.041	3.361
0.2	26	18.03	0.0000	POS_OP	≥ 4.0000	21.80	20.37%	140	69.05%	16.97%	12.228	3.440
0.2	27	17.41	0.0000	PRETAX_PM	≤ 0.2078	20.82	19.45%	140	69.88%	17.38%	11.776	3.407
0.2	28	16.75	0.0000	ROE	≤ 0.3852	19.93	18.63%	132	69.76%	17.40%	11.546	3.389
0.2	29	16.42	0.0000	ROA	≤ 0.1331	19.42	18.15%	127	69.87%	17.49%	11.334	3.377
0.2	30	15.66	0.0000	CH_INVISALES(-9m)	≤ 0.3021	18.48	17.27%	114	69.81%	17.82%	10.734	3.316
0.2	31	15.16	0.0000	CH_INVITA	≥ -0.0194	15.35	14.35%	111	75.27%	19.14%	10.643	3.378
0.2	32	14.54	0.0000	CAPGEAR	≥ 0.0269	14.43	13.49%	108	76.71%	19.55%	10.453	3.386
0.2	33	14.10	0.0000	CH_INVITA(-12m)	≥ -0.0248	12.58	11.76%	100	82.97%	20.90%	10.546	3.470
0.2	34	13.68	0.0000	NTC	≥ 12.7478	11.73	10.97%	92	82.11%	21.67%	9.492	3.306
0.2	35	13.35	0.0000	CH_INVTURN(-12m)	≥ -2.3977	11.32	10.58%	91	83.05%	21.89%	9.413	3.315
0.2	36	13.25	0.0000	CH_INVTURN(-6m)	≥ -2.3977	11.25	10.51%	91	83.47%	22.11%	9.222	3.301
0.2	37	12.89	0.0000	CH_EBTISALES(-12m)	≥ -0.7558	10.48	9.80%	90	84.20%	22.21%	9.195	3.315
0.2	38	12.32	0.0000	EARNG_24(-12m)	≥ -0.1674	9.27	8.66%	79	88.02%	22.27%	9.858	3.480
0.2	39	11.92	0.0000	EARNG_24(-9m)	≥ -0.1156	8.68	8.12%	76	90.10%	27.96%	6.479	2.846
0.2	40	11.37	0.0000	POS_NET(-12m)	≤ 32.0000	8.62	8.05%	64	86.99%	27.90%	6.000	2.740
0.2	41	10.92	0.0000	SALESTCASH	≥ -28.0377	8.03	7.51%	62	87.97%	27.96%	6.047	2.773
0.2	42	10.79	0.0000	EARNG_12	≥ -0.0153	6.53	6.11%	60	93.71%	20.25%	12.941	4.119
0.2	43	10.64	0.0000	POS_OP(-12m)	≤ 28.0000	6.47	6.04%	56	91.03%	20.16%	12.189	4.000
0.2	44	10.01	0.0000	DY(-9m)	≥ 0.0018	5.98	5.59%	40	80.74%	19.64%	9.996	3.581
0.2	45	9.94	0.0000	DY(-12m)	≥ 0.0044	5.95	5.56%	40	81.20%	22.21%	7.830	3.187
0.2	46	9.58	0.0000	CH_DPS(-9m)	≥ -0.4286	5.42	5.06%	37	87.41%	25.88%	6.612	2.981
0.2	47	9.26	0.0000	CH_DPS(-12m)	≥ -0.5693	5.23	4.89%	37	89.33%	25.87%	6.842	3.061
0.2	48	8.96	0.0000	CH_DEP(-12m)	≤ 0.3734	4.60	4.30%	36	91.59%	25.59%	7.284	3.184
0.2	49	8.30	0.0000	NOSHARES	≤ 146056	3.58	3.35%	28	92.17%	26.32%	6.899	3.108
0.2	50	6.71	0.0000	GM	≥ -0.0822	2.67	2.49%	18	96.46%	25.56%	7.922	3.399
0.2	51	6.24	0.0000	GM(-12m)	≥ -0.0822	2.17	2.02%	11	89.75%	25.21%	6.981	3.177
0.2	52	5.53	0.0000	REVISION_24	≤ 0.4288	1.58	1.48%	2	61.72%	24.94%	3.342	2.078
0.2	53	5.27	0.0000	REVISION_12	≤ 0.2044	1.58	1.48%	2	64.13%	25.21%	3.500	2.146
0.2	54	4.75	0.0000	DY	≤ 0.0470	1.58	1.48%	2	66.17%	25.82%	3.519	2.173
0.2	55	4.24	0.0000	SDEV_VOL	≥ -0.4409	1.47	1.37%	0	63.64%	24.31%	3.640	2.226
0.2	56	3.96	0.0001	GFORECAST_12	≤ 4.4250	1.12	1.04%	0	61.78%	25.26%	3.148	2.079
0.2	57	3.76	0.0001	SDEV_VOL(-9m)	≥ -1.4093	1.03	0.97%	0	63.27%	25.63%	3.179	2.105
0.2	58	3.66	0.0002	SDEV_VOL(-12m)	≥ -1.2656	0.83	0.78%	0	64.55%	26.23%	3.133	2.103
0.2	59	3.32	0.0005	EARNG_60	≤ 0.1153	0.60	0.56%	0	65.14%	26.66%	3.062	2.080
0.2	60	2.31	0.0105	SDEV_VOL(-6m)	≥ 0.3231	0.60	0.56%	0	59.64%	26.66%	2.544	1.884

No	2000			2001			2002			2003			2004		
1	**1.63%**	*374%*	*2763*	**42.20%**	*21509%*	*6116*	**42.28%**	*25958%*	*7368*	**59.03%**	*38475%*	*7821*	**55.44%**	*21916%*	*4744*
2	**6.76%**	*1078%*	*1917*	**48.61%**	*17519%*	*4334*	**53.60%**	*24884%*	*5581*	**62.27%**	*32584%*	*6279*	**55.64%**	*18424%*	*3981*
3	**3.62%**	*285%*	*945*	**51.47%**	*12757%*	*2974*	**60.35%**	*19980%*	*3973*	**67.76%**	*27461%*	*4863*	**55.44%**	*16472%*	*3565*
4	**3.97%**	*310%*	*938*	**52.41%**	*12814%*	*2934*	**60.40%**	*19988%*	*3971*	**66.74%**	*26241%*	*4718*	**59.74%**	*16325%*	*3279*
5	**3.97%**	*310%*	*938*	**52.41%**	*12814%*	*2934*	**60.72%**	*19988%*	*3950*	**67.79%**	*26366%*	*4667*	**59.76%**	*16269%*	*3267*
6	**4.30%**	*328%*	*917*	**53.15%**	*12489%*	*2820*	**61.93%**	*19920%*	*3860*	**68.62%**	*26030%*	*4552*	**61.49%**	*15778%*	*3079*
7	**4.30%**	*328%*	*917*	**52.96%**	*12419%*	*2814*	**62.41%**	*19920%*	*3830*	**68.62%**	*26030%*	*4552*	**61.49%**	*15778%*	*3079*
8	**4.37%**	*324%*	*892*	**53.23%**	*12144%*	*2738*	**63.20%**	*19564%*	*3715*	**68.87%**	*25706%*	*4479*	**61.38%**	*15387%*	*3008*
9	**4.49%**	*327%*	*875*	**55.23%**	*12210%*	*2653*	**63.05%**	*18396%*	*3501*	**69.28%**	*24749%*	*4287*	**59.32%**	*14118%*	*2856*
10	**4.76%**	*338%*	*854*	**55.00%**	*12146%*	*2650*	**63.06%**	*18273%*	*3477*	**69.08%**	*24542%*	*4263*	**59.32%**	*14118%*	*2856*
11	**4.76%**	*338%*	*854*	**55.00%**	*12146%*	*2650*	**63.06%**	*18273%*	*3477*	**68.94%**	*24303%*	*4230*	**59.83%**	*14045%*	*2817*
12	**4.76%**	*338%*	*854*	**55.27%**	*12177%*	*2644*	**62.91%**	*18070%*	*3447*	**68.98%**	*24309%*	*4229*	**59.60%**	*13876%*	*2794*
13	**4.76%**	*338%*	*854*	**55.27%**	*12173%*	*2643*	**61.11%**	*17379%*	*3413*	**68.78%**	*24166%*	*4216*	**59.65%**	*13589%*	*2734*
14	**4.96%**	*349%*	*844*	**54.29%**	*11704%*	*2587*	**56.69%**	*15868%*	*3359*	**68.78%**	*24166%*	*4216*	**59.65%**	*13589%*	*2734*
15	**5.07%**	*347%*	*821*	**53.00%**	*10936%*	*2476*	**56.77%**	*15716%*	*3322*	**68.67%**	*23663%*	*4135*	**60.16%**	*13404%*	*2674*
16	**5.31%**	*360%*	*814*	**53.47%**	*10623%*	*2384*	**56.67%**	*15310%*	*3242*	**68.96%**	*23349%*	*4063*	**60.42%**	*13096%*	*2601*
17	**5.01%**	*330%*	*790*	**52.63%**	*9972%*	*2274*	**57.91%**	*15231%*	*3156*	**68.92%**	*22920%*	*3991*	**61.16%**	*13092%*	*2569*
18	**5.23%**	*337%*	*774*	**51.09%**	*9540%*	*2241*	**58.12%**	*15188%*	*3136*	**69.43%**	*22131%*	*3825*	**64.88%**	*13019%*	*2408*
19	**4.59%**	*277%*	*725*	**50.65%**	*8370%*	*1983*	**58.88%**	*14489%*	*2953*	**70.73%**	*21284%*	*3611*	**69.56%**	*13031%*	*2248*
20	**11.99%**	*595%*	*595*	**49.91%**	*6971%*	*1676*	**60.99%**	*13752%*	*2706*	**72.53%**	*20568%*	*3403*	**68.34%**	*12141%*	*2132*
21	**11.99%**	*595%*	*595*	**49.91%**	*6971%*	*1676*	**62.09%**	*13785%*	*2664*	**72.77%**	*19873%*	*3277*	**68.27%**	*11651%*	*2048*
22	**11.71%**	*580%*	*594*	**49.96%**	*6932%*	*1665*	**60.25%**	*13099%*	*2609*	**74.04%**	*19362%*	*3138*	**69.84%**	*11582%*	*1990*
23	**12.07%**	*566%*	*563*	**50.57%**	*6857%*	*1627*	**60.26%**	*12741%*	*2537*	**73.61%**	*18659%*	*3042*	**69.07%**	*10816%*	*1879*
24	**15.78%**	*656%*	*499*	**57.07%**	*6016%*	*1265*	**64.53%**	*11846%*	*2203*	**75.70%**	*17411%*	*2760*	**74.69%**	*10189%*	*1637*
25	**15.78%**	*656%*	*499*	**57.07%**	*6016%*	*1265*	**63.53%**	*11589%*	*2189*	**77.63%**	*17162%*	*2653*	**74.43%**	*9862%*	*1590*
26	**14.67%**	*577%*	*475*	**61.32%**	*5325%*	*1042*	**66.88%**	*10656%*	*1912*	**79.84%**	*16627%*	*2499*	**76.69%**	*9280%*	*1452*
27	**15.33%**	*549%*	*430*	**58.10%**	*4202%*	*868*	**68.78%**	*10202%*	*1780*	**80.33%**	*16509%*	*2466*	**76.75%**	*9210%*	*1440*
28	**15.33%**	*549%*	*430*	**58.10%**	*4202%*	*868*	**68.78%**	*10202%*	*1780*	**78.47%**	*15243%*	*2331*	**81.95%**	*8379%*	*1227*
29	**15.33%**	*549%*	*430*	**58.10%**	*4202%*	*868*	**68.92%**	*10207%*	*1777*	**78.74%**	*14633%*	*2230*	**83.71%**	*7861%*	*1127*
30	**15.33%**	*549%*	*430*	**57.95%**	*4051%*	*839*	**69.71%**	*8754%*	*1507*	**77.42%**	*12638%*	*1959*	**86.97%**	*7863%*	*1085*
31	**20.96%**	*508%*	*291*	**54.97%**	*2648%*	*578*	**73.52%**	*7670%*	*1252*	**84.60%**	*12282%*	*1742*	**87.88%**	*7829%*	*1069*
32	**20.96%**	*508%*	*291*	**53.97%**	*2397%*	*533*	**78.99%**	*7129%*	*1083*	**85.63%**	*11160%*	*1564*	**87.90%**	*7801%*	*1065*
33	**30.89%**	*592%*	*230*	**52.42%**	*1773%*	*406*	**75.96%**	*5792%*	*915*	**99.39%**	*10883%*	*1314*	**92.42%**	*7509%*	*975*
34	**-4.62%**	*-65%*	*170*	**51.34%**	*1583%*	*370*	**75.96%**	*5792%*	*915*	**96.33%**	*10090%*	*1257*	**96.94%**	*7562%*	*936*
35	**-4.62%**	*-65%*	*170*	**51.34%**	*1583%*	*370*	**76.15%**	*5768%*	*909*	**99.43%**	*9728%*	*1174*	**98.78%**	*7153%*	*869*
36	**-4.62%**	*-65%*	*170*	**52.17%**	*1570%*	*361*	**76.24%**	*5604%*	*882*	**99.43%**	*9728%*	*1174*	**99.69%**	*7119%*	*857*
37	**-4.62%**	*-65%*	*170*	**52.17%**	*1570%*	*361*	**76.24%**	*5604%*	*882*	**100.99%**	*9418%*	*1119*	**103.87%**	*6544%*	*756*
38	**-3.98%**	*-29%*	*87*	**62.64%**	*881%*	*169*	**74.82%**	*4570%*	*733*	**100.07%**	*8631%*	*1035*	**100.75%**	*6280%*	*748*
39	**-30.56%**	*-125%*	*49*	**61.20%**	*592%*	*116*	**74.61%**	*4123%*	*664*	**101.57%**	*8591%*	*1015*	**100.75%**	*6280%*	*748*
40	**-30.56%**	*-125%*	*49*	**61.20%**	*592%*	*116*	**73.56%**	*4034%*	*658*	**94.36%**	*7132%*	*907*	**102.98%**	*5852%*	*682*
41	**-30.56%**	*-125%*	*49*	**54.20%**	*497%*	*110*	**71.10%**	*3294%*	*556*	**98.10%**	*7121%*	*871*	**103.02%**	*5752%*	*670*
42	**0.00%**	*0%*	*0*	**58.49%**	*405%*	*83*	**70.83%**	*2621%*	*444*	**100.84%**	*7076%*	*842*	**104.66%**	*5643%*	*647*
43	**0.00%**	*0%*	*0*	**58.49%**	*405%*	*83*	**70.83%**	*2621%*	*444*	**100.27%**	*6986%*	*836*	**97.55%**	*4918%*	*605*
44	**0.00%**	*0%*	*0*	**58.49%**	*405%*	*83*	**70.21%**	*2534%*	*433*	**86.75%**	*5226%*	*723*	**84.57%**	*3784%*	*537*
45	**0.00%**	*0%*	*0*	**42.64%**	*234%*	*66*	**73.52%**	*2610%*	*426*	**86.75%**	*5226%*	*723*	**84.57%**	*3784%*	*537*
46	**0.00%**	*0%*	*0*	**27.42%**	*78%*	*34*	**93.46%**	*2087%*	*268*	**89.73%**	*5152%*	*689*	**85.19%**	*3784%*	*533*
47	**0.00%**	*0%*	*0*	**27.42%**	*78%*	*34*	**96.63%**	*1705%*	*214*	**92.61%**	*5078%*	*658*	**86.64%**	*3769%*	*522*
48	**0.00%**	*0%*	*0*	**35.25%**	*62%*	*21*	**102.03%**	*1615%*	*190*	**92.98%**	*4905%*	*633*	**88.16%**	*3585%*	*488*
49	**0.00%**	*0%*	*0*	**35.25%**	*62%*	*21*	**102.03%**	*1615%*	*190*	**85.85%**	*3849%*	*538*	**99.86%**	*2954%*	*355*
50	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**78.76%**	*263%*	*40*	**93.21%**	*2656%*	*342*	**101.85%**	*2869%*	*338*
51	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**78.76%**	*263%*	*40*	**88.03%**	*2149%*	*293*	**93.01%**	*2255%*	*291*
52	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**78.76%**	*263%*	*40*	**77.57%**	*1584%*	*245*	**39.67%**	*684%*	*207*
53	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**78.76%**	*263%*	*40*	**79.24%**	*1499%*	*227*	**41.45%**	*611%*	*177*
54	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**67.04%**	*184%*	*33*	**81.49%**	*1256%*	*185*	**46.01%**	*544%*	*142*
55	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**21.31%**	*27%*	*15*	**86.60%**	*981%*	*136*	**45.49%**	*519%*	*137*
56	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**15.48%**	*18%*	*14*	**88.62%**	*761%*	*103*	**46.11%**	*519%*	*135*
57	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**15.48%**	*18%*	*14*	**90.66%**	*695%*	*92*	**48.11%**	*489%*	*122*
58	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**15.48%**	*18%*	*14*	**90.57%**	*687%*	*91*	**49.40%**	*457%*	*111*
59	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**15.48%**	*18%*	*14*	**91.02%**	*667%*	*88*	**44.86%**	*292%*	*78*
60	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**15.48%**	*18%*	*14*	**85.72%**	*221%*	*31*	**55.92%**	*238%*	*51*

Appendix D.9. Results for static comparison level tests: restricted sample

Continued: Comparison level = 25 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.25	1	13.64	0.0000	EY(-12m)	≥	0.1493	49.70	46.45%	288	49.85%	16.09%	10.666	2.433
0.25	2	17.42	0.0000	CH_ARISALES	≤	0.0622	35.60	33.27%	216	62.45%	16.65%	14.717	3.109
0.25	3	17.76	0.0000	CH_SALES(-9m)	≥	-0.2144	32.32	30.20%	194	63.05%	16.96%	14.156	3.089
0.25	4	18.16	0.0000	CH_DEP	≤	0.5228	27.55	25.75%	179	68.51%	17.11%	15.987	3.382
0.25	5	18.35	0.0000	POS_NET	≥	2.0000	27.27	25.48%	179	69.28%	17.11%	16.092	3.428
0.25	6	18.39	0.0000	CH_SALES(-12m)	≥	-0.2144	25.48	23.82%	176	70.35%	17.63%	15.353	3.387
0.25	7	18.37	0.0000	MTB	≤	3.6700	24.55	22.94%	170	70.93%	17.47%	15.641	3.451
0.25	8	18.31	0.0000	EY(-9m)	≥	0.0596	23.55	22.01%	167	71.45%	17.31%	15.903	3.511
0.25	9	18.30	0.0000	ROA(-12m)	≥	-0.1173	23.53	21.99%	167	71.49%	17.30%	15.731	3.517
0.25	10	18.21	0.0000	MOM_6(-6m)	≥	-0.3419	22.95	21.45%	160	71.51%	17.02%	15.989	3.572
0.25	11	18.08	0.0000	ROE(-12m)	≥	-0.0294	22.08	20.64%	157	71.94%	17.55%	15.003	3.489
0.25	12	17.94	0.0000	ROE(-9m)	≥	-0.0748	21.98	20.55%	157	71.91%	17.57%	14.741	3.481
0.25	13	17.80	0.0000	CH_ASSTURN(-6m)	≥	-0.2930	21.87	20.44%	151	71.26%	17.49%	14.411	3.461
0.25	14	17.68	0.0000	CH_ASSTURN(-12m)	≥	-0.3121	21.52	20.11%	147	71.03%	17.51%	14.086	3.446
0.25	15	17.59	0.0000	OPINCITA(-12m)	≥	0.0168	21.32	19.92%	144	70.79%	17.53%	13.777	3.430
0.25	16	17.44	0.0000	MOM_6(-3m)	≥	-0.1964	20.77	19.41%	136	72.78%	17.66%	14.099	3.515
0.25	17	17.34	0.0000	MOM_3(-6m)	≥	-0.2988	20.77	19.41%	134	72.54%	17.65%	13.854	3.505
0.25	18	17.17	0.0000	OPINCITA	≤	0.2886	20.37	19.03%	130	72.42%	17.60%	13.693	3.508
0.25	19	16.97	0.0000	MOM_3(-9m)	≥	-0.2761	20.12	18.80%	130	72.79%	17.50%	13.809	3.549
0.25	20	16.76	0.0000	PRETAX_PM	≤	0.2078	18.95	17.71%	130	74.12%	17.82%	13.616	3.558
0.25	21	16.43	0.0000	CH_TA(-9m)	≤	0.4455	18.63	17.41%	129	74.33%	17.81%	13.537	3.574
0.25	22	16.10	0.0000	POS_OP	≥	4.0000	18.22	17.02%	128	76.95%	17.98%	14.020	3.687
0.25	23	15.73	0.0000	CH_TA(-12m)	≤	0.3696	17.03	15.92%	127	77.43%	18.14%	13.765	3.682
0.25	24	15.25	0.0000	CH_TA(-6m)	≤	0.3614	16.65	15.56%	120	76.36%	18.25%	13.053	3.597
0.25	25	14.93	0.0000	CH_TA	≤	0.3777	16.05	15.00%	120	76.65%	18.81%	12.224	3.503
0.25	26	14.49	0.0000	POS_ROE	≥	3.0000	15.63	14.61%	117	76.02%	19.02%	11.622	3.430
0.25	27	14.22	0.0000	CH_ASSTURN	≥	-0.1254	14.97	13.99%	117	76.85%	19.14%	11.574	3.451
0.25	28	13.80	0.0000	ROE	≤	0.3852	14.52	13.57%	109	76.28%	19.09%	11.322	3.426
0.25	29	13.62	0.0000	ROA	≤	0.1331	14.23	13.30%	105	76.00%	19.13%	11.063	3.402
0.25	30	13.25	0.0000	CH_INVITA	≥	-0.0194	12.43	11.62%	96	78.77%	19.66%	11.096	3.456
0.25	31	12.92	0.0000	CH_INVISALES(-9m)	≤	0.3021	11.83	11.06%	91	79.05%	19.92%	10.748	3.425
0.25	32	12.41	0.0000	CH_INVITA(-12m)	≥	-0.0248	10.07	9.41%	80	83.10%	21.23%	10.311	3.411
0.25	33	12.04	0.0000	CAPGEAR	≥	0.0269	9.48	8.86%	80	86.36%	21.76%	10.466	3.479
0.25	34	11.74	0.0000	CH_INVTURN(-12m)	≥	-2.3977	9.10	8.50%	77	86.17%	21.75%	10.316	3.473
0.25	35	11.52	0.0000	CH_INVTURN(-6m)	≥	-2.3977	8.98	8.40%	77	86.75%	21.96%	10.141	3.465
0.25	36	11.39	0.0000	NTC	≥	12.7478	8.52	7.96%	73	86.53%	20.14%	11.872	3.767
0.25	37	11.10	0.0000	CH_EBTtSALES(-12m)	≥	-0.7558	8.15	7.62%	73	87.89%	20.45%	11.747	3.772
0.25	38	10.56	0.0000	EARNG_24(-12m)	≥	-0.1674	6.92	6.46%	62	94.23%	20.72%	12.989	4.032
0.25	39	10.18	0.0000	EARNG_24(-9m)	≥	-0.1156	6.40	5.98%	59	96.41%	25.26%	9.049	3.393
0.25	40	9.63	0.0000	EARNG_12	≥	-0.0153	5.28	4.94%	57	101.84%	21.79%	13.412	4.192
0.25	41	9.03	0.0000	DY(-9m)	≥	0.0018	4.85	4.53%	43	92.45%	21.21%	11.540	3.865
0.25	42	8.95	0.0000	DY(-12m)	≥	0.0044	4.82	4.50%	43	93.25%	23.61%	9.381	3.505
0.25	43	8.62	0.0000	CH_DEP(-12m)	≤	0.3734	4.25	3.97%	42	96.32%	22.33%	11.073	3.850
0.25	44	8.51	0.0000	NOSHARES	≤	146056	3.83	3.58%	42	97.79%	22.90%	10.750	3.820
0.25	45	8.09	0.0000	CH_DPS(-12m)	≥	-0.5693	3.53	3.30%	39	105.92%	26.36%	9.421	3.636
0.25	46	7.36	0.0000	POS_NET(-12m)	≤	32.0000	3.28	3.07%	27	100.56%	26.62%	8.239	3.399
0.25	47	7.31	0.0000	SALESICASH	≥	-28.0377	3.08	2.88%	26	100.56%	26.69%	8.119	3.388
0.25	48	6.94	0.0000	POS_OP(-12m)	≤	24.0000	2.97	2.77%	19	92.09%	26.17%	7.013	3.127
0.25	49	5.94	0.0000	CH_QUICK	≤	0.0989	2.50	2.34%	16	93.64%	23.60%	8.823	3.540
0.25	50	5.41	0.0000	REVISION_24	≤	0.4288	1.98	1.85%	8	72.58%	21.63%	6.253	2.881
0.25	51	5.12	0.0000	REVISION_12	≤	0.2044	1.98	1.85%	8	76.37%	22.29%	6.461	2.957
0.25	52	4.12	0.0000	GM(-12m)	≥	-0.0822	1.40	1.31%	2	62.39%	25.83%	3.179	2.035
0.25	53	3.27	0.0006	ACCITA	≤	0.0194	1.07	1.00%	0	49.91%	20.39%	3.235	2.035
0.25	54	2.55	0.0054	SDEV_VOL(-6m)	≥	-0.9470	0.92	0.86%	0	46.88%	20.80%	2.717	1.845
0.25	55	1.89	0.0296	SDEV_VOL(-9m)	≥	-1.4093	0.67	0.62%	0	51.80%	22.58%	2.791	1.917
0.25	56	1.62	0.0528	SDEV_VOL(-12m)	≥	-1.2656	0.47	0.44%	0	54.09%	24.59%	2.544	1.849

No	2000			2001			2002			2003			2004		
1	0.38%	73%	2293	46.27%	17300%	4487	49.72%	20267%	4891	67.21%	29417%	5252	63.17%	15398%	2925
2	15.04%	1446%	1154	54.72%	11746%	2576	62.82%	16071%	3070	80.14%	23369%	3499	67.92%	11937%	2109
3	13.17%	947%	863	54.21%	10084%	2232	63.26%	15143%	2873	80.94%	22636%	3356	64.16%	10586%	1980
4	16.23%	909%	672	62.67%	9015%	1729	73.35%	14285%	2337	82.76%	20219%	2932	64.10%	9348%	1750
5	16.23%	909%	672	62.67%	9015%	1729	74.02%	14285%	2316	84.82%	20287%	2870	64.43%	9197%	1713
6	14.83%	729%	590	62.83%	8153%	1557	76.90%	13960%	2207	84.74%	19927%	2822	65.36%	9149%	1680
7	15.84%	747%	566	66.74%	8042%	1446	74.32%	13371%	2159	86.27%	19732%	2777	64.81%	8749%	1620
8	14.69%	677%	557	67.47%	7827%	1392	73.84%	12953%	2105	86.57%	19644%	2723	65.86%	8774%	1599
9	14.59%	677%	557	67.47%	7827%	1392	73.84%	12953%	2105	86.57%	19644%	2723	66.01%	8729%	1587
10	14.66%	672%	550	65.86%	7437%	1355	74.01%	12908%	2093	84.29%	18361%	2614	71.69%	8818%	1476
11	15.58%	687%	529	65.96%	7349%	1337	72.70%	12268%	2025	83.95%	18092%	2586	76.64%	8869%	1407
12	15.58%	687%	529	65.96%	7349%	1337	72.70%	12268%	2025	83.57%	17925%	2574	76.45%	8582%	1347
13	15.58%	687%	529	66.01%	7349%	1336	70.50%	11497%	1957	83.35%	17774%	2559	76.45%	8582%	1347
14	15.58%	687%	529	66.01%	7349%	1336	70.52%	11131%	1894	82.90%	17284%	2502	76.45%	8582%	1347
15	15.58%	687%	529	66.01%	7349%	1336	68.71%	10673%	1864	83.77%	17096%	2449	76.61%	8582%	1346
16	15.74%	657%	501	64.88%	6255%	1157	71.09%	10284%	1736	85.07%	16192%	2284	82.97%	8532%	1234
17	15.64%	649%	498	63.80%	6040%	1136	71.00%	10253%	1733	84.84%	16021%	2266	83.15%	8529%	1231
18	16.30%	656%	483	61.17%	5566%	1092	70.28%	9992%	1706	85.71%	16029%	2244	83.15%	8529%	1231
19	16.30%	656%	483	60.62%	5253%	1040	71.16%	10010%	1688	86.16%	15796%	2200	83.72%	8463%	1213
20	16.56%	599%	434	61.31%	4650%	910	72.04%	9912%	1651	86.09%	15654%	2182	86.05%	8397%	1171
21	16.54%	597%	433	61.69%	4270%	832	72.13%	9617%	1600	86.98%	15453%	2132	84.86%	8196%	1159
22	16.26%	562%	415	60.61%	3682%	729	77.93%	8936%	1376	90.42%	15431%	2048	84.23%	7861%	1120
23	16.19%	559%	414	60.67%	3580%	708	78.44%	8929%	1366	91.87%	14645%	1913	85.05%	7675%	1083
24	16.89%	570%	405	58.44%	3316%	681	78.44%	8929%	1366	91.52%	14193%	1861	81.78%	6590%	967
25	16.56%	511%	370	55.70%	3045%	656	78.44%	8929%	1366	92.89%	13895%	1795	81.38%	6273%	925
26	16.56%	511%	370	55.70%	3045%	656	78.44%	8929%	1366	93.10%	13243%	1707	79.44%	5594%	845
27	19.42%	526%	325	54.69%	2921%	641	78.10%	8773%	1348	94.80%	12798%	1620	79.44%	5415%	818
28	19.42%	526%	325	54.69%	2921%	641	78.10%	8773%	1348	92.86%	12026%	1554	82.00%	4892%	716
29	19.42%	526%	325	54.69%	2921%	641	78.10%	8773%	1348	92.21%	11718%	1525	82.69%	4637%	673
30	24.83%	523%	253	57.92%	2370%	491	76.11%	7364%	1161	95.08%	10490%	1324	87.11%	4697%	647
31	24.83%	523%	253	57.72%	2323%	483	77.94%	7035%	1083	94.12%	9773%	1246	89.44%	4614%	619
32	38.76%	669%	207	54.86%	1938%	424	76.84%	5769%	901	104.88%	8652%	990	92.39%	4327%	562
33	38.76%	669%	207	53.44%	1688%	379	82.07%	5293%	774	110.27%	8500%	925	92.67%	4317%	559
34	38.76%	669%	207	53.44%	1688%	379	82.33%	5269%	758	108.69%	7681%	848	97.54%	4340%	534
35	30.89%	494%	192	54.48%	1584%	349	82.67%	5105%	741	108.69%	7681%	848	99.01%	4307%	522
36	0.91%	11%	147	53.32%	1484%	334	82.67%	5105%	741	108.69%	7681%	848	101.71%	4323%	510
37	0.91%	11%	147	53.32%	1484%	334	82.67%	5105%	741	111.02%	7402%	800	110.03%	4016%	438
38	4.41%	21%	57	66.63%	888%	160	82.62%	4083%	593	110.87%	6615%	716	104.70%	3752%	430
39	-24.34%	-61%	30	66.76%	601%	108	82.96%	3650%	528	110.87%	6615%	716	104.70%	3752%	430
40	0.00%	0%	0	58.49%	405%	83	80.21%	2487%	372	117.26%	6596%	675	104.70%	3752%	430
41	0.00%	0%	0	58.49%	405%	83	79.75%	2399%	361	103.52%	4857%	563	96.49%	3064%	385
42	0.00%	0%	0	42.64%	234%	66	83.92%	2476%	354	103.52%	4857%	563	96.49%	3064%	385
43	0.00%	0%	0	49.35%	218%	53	85.79%	2131%	298	107.68%	4702%	524	96.49%	3064%	385
44	0.00%	0%	0	49.35%	218%	53	86.66%	2006%	281	109.23%	4706%	517	97.96%	3045%	373
45	0.00%	0%	0	23.07%	48%	25	119.46%	1414%	142	112.11%	4709%	504	97.96%	3045%	373
46	0.00%	0%	0	23.07%	48%	25	116.86%	1324%	136	98.49%	3250%	396	102.32%	2618%	307
47	0.00%	0%	0	23.07%	48%	25	116.86%	1324%	136	98.49%	3250%	396	102.39%	2517%	295
48	0.00%	0%	0	23.07%	48%	25	116.86%	1324%	136	97.08%	2912%	360	78.17%	1609%	247
49	0.00%	0%	0	-40.85%	-14%	4	106.54%	462%	52	99.24%	2390%	289	85.65%	1563%	219
50	0.00%	0%	0	-40.85%	-14%	4	106.54%	462%	52	88.60%	1772%	240	42.59%	610%	172
51	0.00%	0%	0	-40.85%	-14%	4	106.54%	462%	52	91.21%	1687%	222	45.42%	537%	142
52	0.00%	0%	0	-40.85%	-14%	4	96.12%	248%	31	77.24%	721%	112	44.69%	479%	129
53	0.00%	0%	0	-40.85%	-14%	4	45.00%	30%	8	79.92%	266%	40	43.68%	466%	128
54	0.00%	0%	0	-40.85%	-14%	4	45.00%	30%	8	83.74%	181%	26	39.66%	271%	82
55	0.00%	0%	0	-40.85%	-14%	4	45.00%	30%	8	100.27%	84%	10	50.61%	211%	50
56	0.00%	0%	0	-40.85%	-14%	4	45.00%	30%	8	100.48%	75%	9	54.99%	179%	39

Appendix D.9. Results for static comparison level tests: restricted sample

Continued: Comparison level = 30 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.3	1	10.40	0.0000	EY(-12m)	≥ 0.1493	49.70	46.45%	288	49.85%	16.09%	10.666	2.433
0.3	2	15.25	0.0000	CH_ARISALES	≤ 0.0922	35.60	33.27%	216	62.45%	16.65%	14.717	3.109
0.3	3	16.10	0.0000	CH_ASSTURN(-12m)	≥ -0.1046	25.73	24.05%	175	68.28%	18.59%	13.624	3.098
0.3	4	16.39	0.0000	MOM_6(-3m)	≥ -0.1964	24.62	23.01%	159	70.09%	17.56%	15.750	3.381
0.3	5	16.53	0.0000	POS_NET	≥ 4.0000	22.17	20.72%	152	73.58%	17.84%	16.304	3.509
0.3	6	16.61	0.0000	MOM_6(-6m)	≥ -0.3419	21.87	20.44%	150	74.46%	17.92%	16.456	3.560
0.3	7	16.59	0.0000	CH_ASSTURN(-6m)	≥ -0.2930	21.67	20.25%	150	74.45%	17.95%	16.169	3.555
0.3	8	16.56	0.0000	PRETAX_PM	≤ 0.1730	21.07	19.69%	150	74.97%	18.20%	15.702	3.533
0.3	9	16.52	0.0000	CH_DEP	≤ 0.3852	18.52	17.31%	143	79.59%	18.96%	15.999	3.637
0.3	10	16.48	0.0000	EY(-9m)	≥ 0.0596	17.75	16.59%	140	80.14%	18.81%	16.225	3.695
0.3	11	16.50	0.0000	ROE(-12m)	≥ -0.0956	17.25	16.12%	140	80.93%	19.04%	15.928	3.691
0.3	12	16.45	0.0000	CH_SALES(-12m)	≥ -0.1429	17.00	15.89%	140	81.28%	19.50%	15.112	3.622
0.3	13	16.38	0.0000	CH_SALES(-9m)	≥ -0.1429	16.93	15.83%	140	81.36%	19.48%	14.956	3.629
0.3	14	16.30	0.0000	OPINCITA(-12m)	≥ 0.0168	16.73	15.64%	137	81.20%	19.42%	14.794	3.634
0.3	15	16.20	0.0000	MOM_3(-6m)	≥ -0.2968	16.73	15.64%	135	80.97%	19.40%	14.537	3.625
0.3	16	16.06	0.0000	ROE(-9m)	≥ -0.0748	16.63	15.55%	135	81.04%	19.45%	14.298	3.618
0.3	17	15.91	0.0000	MTB	≤ 3.6700	16.38	15.31%	132	80.87%	19.46%	14.043	3.606
0.3	18	15.72	0.0000	OPINCITA	≤ 0.2886	16.20	15.14%	128	80.60%	19.47%	13.743	3.590
0.3	19	15.56	0.0000	MOM_3(-9m)	≥ -0.2761	16.17	15.11%	128	81.10%	19.47%	13.733	3.615
0.3	20	15.35	0.0000	CH_TA(-9m)	≤ 0.4455	15.98	14.94%	127	81.25%	19.42%	13.688	3.635
0.3	21	15.09	0.0000	CH_TA(-12m)	≤ 0.3696	15.27	14.27%	126	81.73%	19.46%	13.609	3.652
0.3	22	14.65	0.0000	POS_OP	≥ 4.0000	14.93	13.96%	125	83.38%	19.71%	13.622	3.691
0.3	23	14.15	0.0000	CH_TA(-6m)	≤ 0.3614	14.55	13.60%	118	82.40%	19.93%	12.836	3.596
0.3	24	13.84	0.0000	CH_TA	≤ 0.3777	13.95	13.04%	118	82.97%	20.79%	11.810	3.474
0.3	25	13.43	0.0000	CH_INVTA	≥ -0.0194	11.67	10.90%	105	87.01%	21.10%	12.400	3.614
0.3	26	13.03	0.0000	ROA	≤ 0.1331	11.28	10.55%	97	86.33%	21.10%	12.062	3.580
0.3	27	13.00	0.0000	ROE	≤ 0.3852	11.23	10.50%	96	86.23%	21.10%	11.901	3.576
0.3	28	12.69	0.0000	POS_ROE	≥ 7.0000	9.98	9.33%	92	89.25%	21.74%	11.845	3.608
0.3	29	12.39	0.0000	CH_ASSTURN	≥ -0.1652	9.60	8.97%	92	89.91%	21.94%	11.670	3.607
0.3	30	12.08	0.0000	CH_INVISALES(-9m)	≤ 0.3021	9.00	8.41%	87	91.01%	22.39%	11.339	3.585
0.3	31	11.82	0.0000	CAPGEAR	≥ 0.0269	8.67	8.10%	84	90.56%	22.65%	10.850	3.528
0.3	32	11.59	0.0000	NTC	≥ 12.7478	7.73	7.23%	77	92.29%	22.83%	10.959	3.574
0.3	33	11.50	0.0000	CH_INVTURN(-6m)	≥ -2.3977	7.68	7.18%	77	92.78%	23.02%	10.774	3.566
0.3	34	11.40	0.0000	CH_INVTURN(-12m)	≥ -2.3977	7.63	7.13%	77	93.14%	23.02%	10.735	3.581
0.3	35	11.19	0.0000	CH_EBTISALES(-12m)	≥ -0.7558	7.33	6.85%	77	94.38%	23.19%	10.746	3.605
0.3	36	10.65	0.0000	EARNG_24(-12m)	≥ -0.1674	6.75	6.31%	69	94.90%	24.47%	9.641	3.437
0.3	37	10.38	0.0000	EARNG_24(-9m)	≥ -0.1156	6.47	6.04%	66	95.89%	24.96%	9.363	3.410
0.3	38	10.16	0.0000	ROA(-12m)	≥ 0.0293	6.15	5.75%	65	97.21%	25.16%	9.365	3.438
0.3	39	9.77	0.0000	EARNG_12	≥ -0.0153	5.27	4.92%	63	101.73%	21.29%	14.164	4.283
0.3	40	9.37	0.0000	CH_DEP(-12m)	≤ 0.3075	4.63	4.33%	53	99.35%	21.77%	12.788	4.084
0.3	41	9.20	0.0000	DY(-9m)	≥ 0.0018	4.38	4.10%	49	94.99%	21.56%	11.800	3.919
0.3	42	9.13	0.0000	DY(-12m)	≥ 0.0044	4.35	4.07%	49	95.79%	21.35%	12.117	3.994
0.3	43	8.96	0.0000	NOSHARES	≤ 162222	3.93	3.68%	49	97.04%	22.06%	11.526	3.922
0.3	44	8.77	0.0000	CH_DPS(-12m)	≥ -0.5693	3.63	3.40%	46	103.80%	23.25%	11.756	4.021
0.3	45	8.09	0.0000	POS_NET(-12m)	≤ 32.0000	3.38	3.16%	34	99.05%	23.74%	10.153	3.734
0.3	46	8.05	0.0000	SALESICASH	≥ -28.0377	3.18	2.98%	33	99.03%	23.69%	10.101	3.741
0.3	47	7.41	0.0000	POS_OP(-12m)	≤ 24.0000	3.07	2.87%	21	89.94%	22.79%	8.909	3.490
0.3	48	6.52	0.0000	CH_INVITA(-12m)	≥ -0.0248	2.48	2.32%	18	97.21%	26.66%	7.527	3.252
0.3	49	5.49	0.0000	REVISION_24	≤ 0.4288	1.83	1.71%	8	76.93%	24.30%	5.617	2.734
0.3	50	5.25	0.0000	REVISION_12	≤ 0.2044	1.83	1.71%	8	80.99%	22.95%	6.913	3.062
0.3	51	4.63	0.0000	CH_QUICK	≤ 0.0989	1.70	1.59%	8	83.53%	23.37%	7.023	3.106
0.3	52	3.68	0.0001	SDEV_VOL(-12m)	≥ -1.2656	1.42	1.32%	3	76.42%	22.88%	6.074	2.677
0.3	53	2.94	0.0017	GM(-12m)	≥ -0.0622	1.03	0.97%	1	67.90%	26.33%	3.590	2.208
0.3	54	2.37	0.0089	SDEV_VOL(-9m)	≥ -1.4093	0.90	0.84%	0	61.19%	27.54%	2.641	1.899
0.3	55	2.17	0.0150	ACCITA	≤ 0.0194	0.70	0.65%	0	56.90%	23.63%	3.073	2.053
0.3	56	1.35	0.0688	SDEV_VOL(-6m)	≥ -0.9470	0.47	0.44%	0	54.09%	24.59%	2.544	1.849

No	2000			2001			2002			2003			2004		
1	0.38%	73%	2293	46.27%	17300%	4487	49.72%	20267%	4891	67.21%	29417%	5252	63.17%	15398%	2925
2	16.04%	1446%	1154	64.72%	11746%	2576	62.82%	16071%	3070	80.14%	23369%	3499	67.92%	11937%	2109
3	10.32%	509%	592	59.66%	7661%	1541	68.71%	12310%	2150	83.34%	21113%	3040	68.81%	9616%	1677
4	14.88%	662%	534	63.25%	6393%	1213	69.30%	11354%	1966	82.08%	19486%	2849	73.41%	9628%	1574
5	16.66%	650%	468	62.41%	5669%	1090	75.36%	10645%	1695	86.50%	18316%	2541	75.58%	9309%	1478
6	16.91%	650%	461	63.49%	5523%	1044	75.86%	10513%	1663	86.43%	17984%	2497	78.51%	9258%	1415
7	16.91%	650%	461	63.49%	5523%	1044	75.91%	10508%	1661	86.42%	17910%	2487	78.51%	9258%	1415
8	16.28%	620%	457	65.04%	5361%	989	76.92%	10409%	1624	86.42%	17910%	2487	78.51%	9258%	1415
9	24.64%	760%	370	71.09%	4793%	809	84.34%	9615%	1368	87.08%	16465%	2269	82.47%	8880%	1292
10	22.87%	690%	362	72.67%	4651%	769	82.84%	9216%	1335	88.54%	16372%	2219	83.49%	8898%	1279
11	22.87%	690%	362	72.67%	4651%	769	82.84%	9216%	1335	88.29%	16157%	2196	88.18%	8862%	1206
12	21.27%	581%	328	73.21%	4606%	755	82.84%	9216%	1335	88.29%	16157%	2196	88.18%	8862%	1206
13	21.27%	581%	328	73.21%	4606%	755	82.84%	9216%	1335	88.33%	15989%	2172	88.67%	8823%	1194
14	21.27%	581%	328	73.21%	4606%	755	80.63%	8757%	1305	89.48%	15801%	2119	88.74%	8823%	1193
15	21.17%	573%	325	71.78%	4391%	734	80.43%	8726%	1302	89.27%	15629%	2101	88.94%	8820%	1190
16	21.17%	573%	325	71.78%	4391%	734	80.43%	8726%	1302	88.82%	15462%	2089	90.62%	8533%	1130
17	21.17%	573%	325	71.78%	4391%	734	80.43%	8726%	1302	88.36%	15294%	2077	91.22%	8134%	1070
18	22.45%	580%	310	68.12%	3917%	690	79.44%	8500%	1284	88.69%	15300%	2070	91.22%	8134%	1070
19	22.45%	580%	310	67.37%	3649%	650	80.74%	8518%	1266	89.26%	15077%	2027	91.48%	8104%	1063
20	22.45%	578%	309	66.89%	3434%	616	81.00%	8390%	1243	90.30%	14877%	1977	90.24%	7903%	1051
21	22.45%	578%	309	66.89%	3434%	616	81.45%	8383%	1235	91.69%	14258%	1866	90.73%	7757%	1026
22	22.41%	544%	291	66.16%	2971%	539	84.42%	8006%	1138	94.00%	14076%	1797	90.23%	7422%	987
23	23.62%	555%	282	63.46%	2708%	512	84.42%	8006%	1138	93.69%	13624%	1745	87.30%	6337%	871
24	24.08%	496%	247	60.03%	2436%	487	84.42%	8006%	1138	95.24%	13326%	1679	87.14%	6020%	829
25	33.81%	493%	175	67.11%	1885%	337	83.24%	6597%	951	97.64%	11791%	1449	92.60%	5772%	748
26	33.81%	493%	175	67.11%	1885%	337	83.24%	6597%	951	95.11%	10867%	1371	95.95%	5453%	682
27	33.81%	493%	175	67.11%	1885%	337	83.24%	6597%	951	94.89%	10817%	1368	96.06%	5387%	673
28	33.81%	493%	175	67.11%	1885%	337	85.66%	6518%	913	104.38%	10090%	1160	94.33%	4488%	571
29	33.81%	493%	175	67.11%	1885%	337	85.30%	6362%	895	107.87%	9645%	1073	94.13%	4361%	556
30	33.81%	493%	175	67.04%	1838%	329	88.61%	6033%	817	107.67%	8928%	995	97.24%	4278%	528
31	33.81%	493%	175	67.04%	1838%	329	91.69%	6028%	789	105.16%	8027%	916	97.03%	4261%	527
32	-3.16%	-18%	70	64.63%	1497%	278	91.69%	6028%	789	102.04%	7389%	869	105.33%	4301%	490
33	-3.16%	-18%	70	66.19%	1484%	269	92.35%	5864%	762	102.04%	7389%	869	105.33%	4301%	490
34	-3.16%	-18%	70	66.19%	1484%	269	92.70%	5840%	756	103.10%	7208%	839	105.33%	4301%	490
35	-3.16%	-18%	70	66.19%	1484%	269	92.70%	5840%	756	103.43%	7051%	818	113.78%	4049%	427
36	-24.34%	-61%	30	66.10%	947%	172	89.79%	5073%	678	103.00%	6746%	786	108.25%	3807%	422
37	-24.34%	-61%	30	64.03%	688%	129	90.85%	4641%	613	103.00%	6746%	786	108.25%	3807%	422
38	-24.34%	-61%	30	64.03%	688%	129	91.55%	4333%	568	105.88%	6591%	747	108.25%	3807%	422
39	0.00%	0%	0	56.77%	492%	104	91.04%	3376%	445	111.14%	6567%	709	108.25%	3807%	422
40	0.00%	0%	0	62.77%	476%	91	94.18%	3249%	414	101.38%	5170%	612	109.75%	3722%	407
41	0.00%	0%	0	62.77%	476%	91	94.18%	3249%	414	97.78%	4840%	594	99.27%	3119%	377
42	0.00%	0%	0	49.53%	305%	74	98.05%	3326%	407	97.78%	4840%	594	99.27%	3119%	377
43	0.00%	0%	0	49.53%	305%	74	98.49%	3201%	390	99.03%	4844%	587	101.91%	3100%	365
44	0.00%	0%	0	35.36%	136%	46	124.71%	2609%	251	101.34%	4847%	574	101.91%	3100%	365
45	0.00%	0%	0	35.36%	136%	46	123.40%	2519%	245	87.26%	3389%	466	107.26%	2673%	299
46	0.00%	0%	0	35.36%	136%	46	123.40%	2519%	245	87.26%	3389%	466	107.54%	2572%	287
47	0.00%	0%	0	35.36%	136%	46	116.62%	1827%	188	87.60%	3029%	415	83.55%	1664%	239
48	0.00%	0%	0	23.07%	48%	25	116.86%	1324%	136	98.11%	2772%	339	91.10%	1397%	184
49	0.00%	0%	0	-40.85%	-14%	4	106.64%	462%	52	90.30%	2160%	287	44.00%	546%	149
50	0.00%	0%	0	-40.85%	-14%	4	106.64%	462%	52	92.67%	2075%	269	47.73%	473%	119
51	0.00%	0%	0	-40.85%	-14%	4	106.64%	462%	52	92.34%	1547%	201	56.37%	428%	91
52	0.00%	0%	0	-40.85%	-14%	4	123.38%	391%	38	81.85%	709%	104	53.50%	366%	82
53	0.00%	0%	0	-40.85%	-14%	4	118.22%	177%	18	76.42%	363%	57	55.47%	356%	77
54	0.00%	0%	0	-40.85%	-14%	4	81.99%	82%	12	82.97%	138%	20	57.34%	344%	72
55	0.00%	0%	0	-40.85%	-14%	4	45.00%	30%	8	94.73%	95%	12	57.34%	344%	72
56	0.00%	0%	0	-40.85%	-14%	4	45.00%	30%	8	100.48%	75%	9	54.99%	179%	39

Appendix D.9. Results for static comparison level tests: restricted sample

Continued: Comparison level = 35 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.35	1	7.70	0.0000	MTB	≤	0.6700	24.95	23.32%	148	57.38%	25.21%	5.402	1.851
0.35	2	10.83	0.0000	CH_TA(-12m)	≤	0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.35	3	11.30	0.0000	CH_INVITA(-12m)	≥	-0.0248	13.60	12.71%	78	75.08%	37.79%	3.863	1.701
0.35	4	11.72	0.0000	POS_ROE	≥	3.0000	13.07	12.21%	78	76.94%	37.55%	4.045	1.762
0.35	5	11.71	0.0000	ROA(-12m)	≥	-0.1173	12.13	11.34%	70	72.89%	20.57%	11.902	3.014
0.35	6	11.66	0.0000	OPINCITA	≤	0.2886	12.12	11.32%	69	72.75%	20.54%	11.717	3.013
0.35	7	11.59	0.0000	ROE	≤	0.3420	11.47	10.72%	64	72.85%	21.06%	10.999	2.942
0.35	8	11.49	0.0000	CH_TA(-9m)	≤	0.2363	11.15	10.42%	61	72.75%	20.90%	10.975	2.960
0.35	9	11.41	0.0000	CH_TA	≤	0.3777	10.33	9.66%	61	73.58%	21.01%	10.948	2.984
0.35	10	11.38	0.0000	CH_TA(-6m)	≤	0.2556	10.32	9.64%	61	73.58%	21.00%	10.805	2.985
0.35	11	11.33	0.0000	POS_OP	≥	-8.0000	10.00	9.35%	61	74.38%	21.44%	10.443	2.964
0.35	12	11.13	0.0000	CH_ASSTURN(-12m)	≥	-0.1046	8.52	7.96%	47	71.24%	21.89%	9.041	2.762
0.35	13	11.20	0.0000	CH_INVSALES(-9m)	≤	0.3021	7.50	7.01%	46	73.29%	22.41%	8.994	2.789
0.35	14	11.16	0.0000	CH_SALES(-9m)	≥	-0.1429	7.27	6.79%	46	73.73%	22.43%	8.967	2.806
0.35	15	11.11	0.0000	MOM_3(-9m)	≥	-0.2761	7.25	6.78%	46	74.12%	22.43%	8.936	2.822
0.35	16	11.05	0.0000	CH_ASSTURN	≥	-0.1652	7.02	6.56%	46	74.39%	22.54%	8.799	2.822
0.35	17	10.99	0.0000	MOM_3(-6m)	≥	-0.2988	6.85	6.40%	44	74.43%	22.59%	8.657	2.817
0.35	18	10.91	0.0000	MOM_6(-6m)	≥	-0.3419	6.77	6.32%	43	74.19%	22.62%	8.473	2.803
0.35	19	10.59	0.0000	MOM_6(-3m)	≥	-0.1438	6.67	6.23%	42	74.04%	22.50%	8.417	2.810
0.35	20	10.26	0.0000	ROE(-12m)	≥	-0.1618	6.32	5.90%	41	74.09%	22.61%	8.233	2.799
0.35	21	10.21	0.0000	CH_SALES(-12m)	≥	-0.0714	6.10	5.70%	41	74.34%	22.59%	8.205	2.813
0.35	22	10.03	0.0000	CH_ARISALES	≤	0.2437	6.00	5.61%	41	74.88%	22.60%	8.212	2.839
0.35	23	9.66	0.0000	CH_DEP	≤	0.5228	5.80	5.42%	38	74.49%	23.16%	7.641	2.752
0.35	24	9.23	0.0000	OPINCITA(-12m)	≥	-0.0148	5.65	5.28%	37	73.89%	23.45%	7.243	2.691
0.35	25	9.12	0.0000	DY(-12m)	≥	0.0229	5.55	5.19%	34	75.29%	23.13%	7.637	2.788
0.35	26	9.13	0.0000	EY(-12m)	≥	0.0971	5.32	4.97%	33	74.87%	23.10%	7.485	2.773
0.35	27	8.98	0.0000	ROE(-9m)	≥	-0.0748	5.27	4.92%	32	74.67%	23.00%	7.424	2.776
0.35	28	8.83	0.0000	EY(-9m)	≥	0.0034	5.03	4.70%	30	74.06%	23.61%	6.850	2.678
0.35	29	8.73	0.0000	DY(-9m)	≥	0.0018	4.82	4.50%	28	73.12%	23.55%	6.634	2.645
0.35	30	8.39	0.0000	CH_EBTISALES(-12m)	≥	-0.6120	4.42	4.13%	24	74.56%	24.04%	6.539	2.658
0.35	31	8.03	0.0000	NOSHARES	≤	178388	3.92	3.66%	23	73.56%	24.44%	6.089	2.574
0.35	32	7.75	0.0000	CH_DPS(-12m)	≥	-0.5893	3.83	3.58%	20	71.96%	24.74%	5.625	2.481
0.35	33	7.46	0.0000	CH_INVITA	≥	-0.0250	3.53	3.30%	20	72.65%	24.97%	5.566	2.484
0.35	34	7.22	0.0000	CH_DPS(-9m)	≥	-0.4286	3.35	3.13%	17	72.89%	25.29%	5.400	2.462
0.35	35	6.97	0.0000	NTC	≥	12.7478	3.10	2.90%	14	70.85%	23.50%	5.847	2.563
0.35	36	6.44	0.0000	POS_NET(-12m)	≤	32.0000	2.77	2.59%	6	62.58%	23.05%	4.691	2.258
0.35	37	5.80	0.0000	CH_ASSTURN(-6m)	≥	-0.0316	2.60	2.43%	5	63.98%	24.17%	4.406	2.208
0.35	38	5.60	0.0000	ROA	≤	0.1197	2.05	1.92%	5	65.42%	27.23%	3.590	2.011
0.35	39	5.23	0.0000	PRETAX_PM	≤	0.2078	1.78	1.67%	5	65.07%	27.10%	3.551	2.002
0.35	40	5.07	0.0000	EARNG_24(-12m)	≥	-0.1674	1.73	1.62%	5	65.84%	25.97%	3.919	2.117
0.35	41	4.99	0.0000	GM(-12m)	≥	-0.0822	1.53	1.43%	4	63.70%	26.23%	3.559	2.014
0.35	42	4.73	0.0000	EARNG_24(-9m)	≥	-0.1156	1.48	1.39%	4	64.05%	26.78%	3.420	1.984
0.35	43	4.46	0.0000	CAPGEAR	≥	0.0269	1.20	1.12%	4	68.94%	30.05%	3.115	1.936
0.35	44	4.28	0.0000	POS_NET	≥	8.0000	0.98	0.92%	4	69.76%	30.68%	3.030	1.922
0.35	45	3.99	0.0001	CH_QUICK	≤	0.0989	0.75	0.70%	1	61.20%	34.81%	1.794	1.453
0.35	46	3.55	0.0002	CH_INVTURN(-6m)	≥	-0.1859	0.65	0.61%	0	80.54%	34.78%	1.741	1.456
0.35	47	2.80	0.0026	SDEV_VOL	≥	-0.4409	0.60	0.56%	0	60.17%	34.45%	1.737	1.470
0.35	48	2.49	0.0065	SDEV_VOL(-9m)	≥	-1.4093	0.57	0.53%	0	53.71%	33.90%	1.416	1.319
0.35	49	2.31	0.0105	SALESTCASH	≥	-28.0377	0.37	0.34%	0	49.17%	19.76%	3.460	2.046
0.35	50	2.11	0.0173	GFORECAST_12	≤	2.0550	0.35	0.33%	0	50.31%	19.04%	3.866	2.197
0.35	51	1.89	0.0296	REVISION_24	≤	0.3213	0.35	0.33%	0	48.23%	19.04%	3.522	2.084
0.35	52	1.28	0.1006	SDEV_VOL(-6m)	≥	-0.9470	0.30	0.28%	0	41.86%	15.72%	3.859	2.101

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**47.63%**	*3584%*	*903*
2	**28.54%**	*930%*	*391*	**70.86%**	*10126%*	*1715*	**76.77%**	*9042%*	*1432*	**91.51%**	*8007%*	*1050*	**61.14%**	*2425%*	*476*
3	**40.56%**	*1014%*	*300*	**67.46%**	*7340%*	*1306*	**83.48%**	*8515%*	*1224*	**86.84%**	*5927%*	*819*	**76.08%**	*2504%*	*395*
4	**41.92%**	*1013%*	*290*	**71.89%**	*7416%*	*1238*	**84.12%**	*8538%*	*1218*	**86.12%**	*5727%*	*798*	**77.82%**	*2542%*	*392*
5	**42.66%**	*1013%*	*285*	**72.01%**	*7333%*	*1222*	**83.65%**	*8407%*	*1206*	**75.78%**	*4704%*	*745*	**53.93%**	*1285%*	*286*
6	**42.66%**	*1013%*	*285*	**72.01%**	*7333%*	*1222*	**83.06%**	*8286%*	*1197*	**76.15%**	*4709%*	*742*	**53.93%**	*1285%*	*286*
7	**42.66%**	*1013%*	*285*	**72.57%**	*7348%*	*1215*	**86.23%**	*8264%*	*1150*	**70.21%**	*4031%*	*689*	**55.08%**	*1198%*	*261*
8	**42.73%**	*993%*	*279*	**70.78%**	*6954%*	*1179*	**86.46%**	*8070%*	*1120*	**71.45%**	*4013%*	*674*	**57.76%**	*1213%*	*252*
9	**42.93%**	*912%*	*255*	**72.12%**	*6659%*	*1108*	**87.13%**	*7951%*	*1095*	**71.45%**	*4013%*	*674*	**57.76%**	*1213%*	*252*
10	**42.93%**	*912%*	*255*	**72.12%**	*6659%*	*1108*	**86.74%**	*7893%*	*1092*	**72.15%**	*3999%*	*665*	**57.76%**	*1213%*	*252*
11	**42.93%**	*912%*	*255*	**72.12%**	*6659%*	*1108*	**90.72%**	*7802%*	*1032*	**70.96%**	*3719%*	*629*	**57.76%**	*1213%*	*252*
12	**56.34%**	*986%*	*210*	**74.58%**	*6029%*	*970*	**80.48%**	*5895%*	*879*	**64.57%**	*3008%*	*559*	**52.36%**	*1039%*	*238*
13	**55.84%**	*963%*	*207*	**76.36%**	*5683%*	*893*	**87.67%**	*5911%*	*809*	**61.48%**	*2675%*	*522*	**53.49%**	*1039%*	*233*
14	**55.38%**	*928%*	*201*	**77.82%**	*5596%*	*863*	**87.67%**	*5911%*	*809*	**61.48%**	*2675%*	*522*	**53.49%**	*1039%*	*233*
15	**55.38%**	*928%*	*201*	**78.39%**	*5435%*	*832*	**88.57%**	*5934%*	*804*	**61.48%**	*2675%*	*522*	**53.49%**	*1039%*	*233*
16	**55.38%**	*928%*	*201*	**78.39%**	*5435%*	*832*	**88.82%**	*5796%*	*783*	**62.71%**	*2649%*	*507*	**53.49%**	*1039%*	*233*
17	**56.66%**	*940%*	*199*	**78.89%**	*5167%*	*786*	**89.57%**	*5755%*	*771*	**60.49%**	*2510%*	*498*	**54.04%**	*1036%*	*230*
18	**56.66%**	*940%*	*199*	**78.07%**	*5016%*	*771*	**89.89%**	*5708%*	*762*	**60.49%**	*2510%*	*498*	**54.04%**	*1036%*	*230*
19	**59.60%**	*904%*	*182*	**76.05%**	*4284%*	*685*	**91.47%**	*5770%*	*757*	**60.66%**	*2507%*	*496*	**53.06%**	*973%*	*220*
20	**59.60%**	*904%*	*182*	**76.37%**	*4226%*	*664*	**91.96%**	*5088%*	*664*	**61.61%**	*2516%*	*490*	**53.06%**	*973%*	*220*
21	**64.49%**	*919%*	*171*	**76.75%**	*4109%*	*651*	**91.96%**	*5088%*	*664*	**61.61%**	*2516%*	*490*	**53.06%**	*973%*	*220*
22	**64.49%**	*919%*	*171*	**76.75%**	*4109%*	*651*	**88.44%**	*4606%*	*625*	**69.49%**	*2646%*	*457*	**53.06%**	*973%*	*220*
23	**65.40%**	*916%*	*168*	**74.34%**	*3593%*	*580*	**89.06%**	*4386%*	*591*	**69.49%**	*2646%*	*457*	**53.06%**	*973%*	*220*
24	**65.40%**	*916%*	*168*	**71.80%**	*3040%*	*508*	**90.24%**	*4173%*	*555*	**69.49%**	*2646%*	*457*	**53.06%**	*973%*	*220*
25	**65.40%**	*916%*	*168*	**71.80%**	*3040%*	*508*	**90.80%**	*4177%*	*552*	**70.35%**	*2034%*	*347*	**56.02%**	*826%*	*177*
26	**65.40%**	*916%*	*168*	**72.47%**	*3020%*	*500*	**91.63%**	*4185%*	*548*	**66.02%**	*1860%*	*338*	**55.27%**	*801%*	*174*
27	**62.64%**	*846%*	*162*	**72.44%**	*2837%*	*470*	**91.63%**	*4185%*	*548*	**66.02%**	*1860%*	*338*	**55.27%**	*801%*	*174*
28	**62.64%**	*846%*	*162*	**72.44%**	*2837%*	*470*	**91.63%**	*4185%*	*548*	**64.83%**	*1648%*	*305*	**49.49%**	*705%*	*171*
29	**62.64%**	*846%*	*162*	**72.44%**	*2837%*	*470*	**91.63%**	*4185%*	*548*	**56.23%**	*1331%*	*284*	**53.26%**	*746%*	*168*
30	**62.64%**	*846%*	*162*	**72.44%**	*2837%*	*470*	**88.67%**	*3336%*	*452*	**78.10%**	*1054%*	*162*	**38.45%**	*352%*	*110*
31	**60.23%**	*728%*	*145*	**73.20%**	*2678%*	*439*	**88.00%**	*3175%*	*433*	**71.10%**	*889%*	*150*	**37.62%**	*328%*	*105*
32	**59.39%**	*698%*	*141*	**73.49%**	*2633%*	*430*	**83.52%**	*2707%*	*389*	**73.54%**	*901%*	*147*	**37.52%**	*328%*	*105*
33	**58.97%**	*688%*	*140*	**75.94%**	*2348%*	*371*	**83.91%**	*2636%*	*377*	**73.54%**	*901%*	*147*	**37.52%**	*328%*	*105*
34	**44.71%**	*455%*	*122*	**79.64%**	*2068%*	*312*	**87.82%**	*2444%*	*334*	**73.54%**	*901%*	*147*	**37.52%**	*328%*	*105*
35	**8.63%**	*60%*	*84*	**79.68%**	*2005%*	*302*	**87.82%**	*2444%*	*334*	**73.54%**	*901%*	*147*	**37.52%**	*328%*	*105*
36	**8.63%**	*60%*	*84*	**73.80%**	*1765%*	*287*	**76.80%**	*1668%*	*264*	**65.90%**	*747%*	*136*	**37.52%**	*328%*	*105*
37	**5.61%**	*18%*	*39*	**74.53%**	*944%*	*152*	**77.96%**	*1481%*	*228*	**65.90%**	*747%*	*136*	**37.52%**	*328%*	*105*
38	**0.00%**	*0%*	*0*	**63.92%**	*368%*	*69*	**79.03%**	*1436%*	*218*	**65.90%**	*747%*	*136*	**37.52%**	*328%*	*105*
39	**0.00%**	*0%*	*0*	**63.92%**	*368%*	*69*	**79.03%**	*1436%*	*218*	**49.87%**	*420%*	*101*	**47.23%**	*315%*	*80*
40	**0.00%**	*0%*	*0*	**69.86%**	*274%*	*47*	**79.33%**	*1428%*	*216*	**49.87%**	*420%*	*101*	**47.23%**	*315%*	*80*
41	**0.00%**	*0%*	*0*	**69.86%**	*274%*	*47*	**79.33%**	*1428%*	*216*	**42.03%**	*322%*	*92*	**41.97%**	*269%*	*77*
42	**0.00%**	*0%*	*0*	**91.77%**	*222%*	*29*	**78.82%**	*1300%*	*198*	**42.03%**	*322%*	*92*	**41.97%**	*269%*	*77*
43	**0.00%**	*0%*	*0*	**93.32%**	*179%*	*23*	**96.16%**	*1082%*	*135*	**44.71%**	*332%*	*89*	**41.97%**	*269%*	*77*
44	**0.00%**	*0%*	*0*	**189.64%**	*95%*	*6*	**98.29%**	*1048%*	*128*	**44.71%**	*332%*	*89*	**41.97%**	*269%*	*77*
45	**0.00%**	*0%*	*0*	**189.64%**	*95%*	*6*	**88.62%**	*702%*	*95*	**39.16%**	*281%*	*86*	**41.97%**	*269%*	*77*
46	**0.00%**	*0%*	*0*	**189.64%**	*95%*	*6*	**80.91%**	*425%*	*63*	**49.72%**	*240%*	*58*	**41.97%**	*269%*	*77*
47	**0.00%**	*0%*	*0*	**248.25%**	*62%*	*3*	**75.08%**	*206%*	*33*	**60.05%**	*170%*	*34*	**43.20%**	*223%*	*62*
48	**0.00%**	*0%*	*0*	**242.47%**	*40%*	*2*	**59.53%**	*50%*	*10*	**60.05%**	*170%*	*34*	**43.20%**	*223%*	*62*
49	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**60.05%**	*170%*	*34*	**43.20%**	*223%*	*62*
50	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**64.78%**	*130%*	*24*	**44.52%**	*223%*	*60*
51	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**62.71%**	*115%*	*22*	**41.86%**	*174%*	*50*
52	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**62.97%**	*110%*	*21*	**25.45%**	*57%*	*27*

Appendix D.9. Results for static comparison level tests: restricted sample

Continued: Comparison level = 40 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.4	1	5.33	0.0000	MTB	≤	0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.4	2	9.20	0.0000	CH_TA(-12m)	≤	0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.4	3	9.97	0.0000	CH_INVITA(-12m)	≥	-0.0248	13.60	12.71%	78	75.08%	37.79%	3.863	1.701
0.4	4	10.44	0.0000	POS_ROE	≥	3.0000	13.07	12.21%	78	76.94%	37.55%	4.045	1.762
0.4	5	10.46	0.0000	ROA(-12m)	≥	-0.1173	12.13	11.34%	70	72.89%	20.57%	11.902	3.014
0.4	6	10.42	0.0000	CH_ASSTURN(-12m)	≥	-0.1046	9.95	9.30%	55	71.51%	21.85%	9.971	2.781
0.4	7	10.44	0.0000	CH_INVISALES(-9m)	≤	0.3021	8.58	8.02%	54	73.49%	22.79%	9.517	2.752
0.4	8	10.53	0.0000	CH_ASSTURN	≥	-0.1254	7.57	7.07%	51	74.57%	22.27%	10.107	2.866
0.4	9	10.53	0.0000	CH_SALES(-9m)	≥	-0.1429	7.33	6.85%	51	75.02%	22.29%	10.067	2.884
0.4	10	10.51	0.0000	MOM_3(-6m)	≥	-0.2988	7.17	6.70%	49	75.08%	22.30%	9.921	2.883
0.4	11	10.47	0.0000	MOM_3(-9m)	≥	-0.2781	7.15	6.68%	49	75.49%	22.32%	9.879	2.900
0.4	12	10.43	0.0000	CH_TA(-6m)	≤	0.3085	7.13	6.67%	49	75.50%	22.29%	9.768	2.904
0.4	13	10.39	0.0000	OPINCITA	≤	0.2886	7.12	6.65%	48	75.31%	22.25%	9.626	2.901
0.4	14	10.31	0.0000	MOM_6(-6m)	≥	-0.3419	7.03	6.57%	47	75.08%	22.28%	9.419	2.888
0.4	15	10.22	0.0000	CH_TA(-9m)	≤	0.1665	6.82	6.37%	47	75.03%	22.43%	9.160	2.867
0.4	16	10.07	0.0000	CH_TA	≤	0.3215	6.72	6.28%	47	75.52%	22.43%	9.153	2.891
0.4	17	9.89	0.0000	POS_NET	≥	4.0000	5.85	5.47%	47	81.61%	24.54%	8.795	2.895
0.4	18	9.67	0.0000	PRETAX_PM	≤	0.1034	5.58	5.22%	47	81.56%	24.68%	8.567	2.875
0.4	19	9.43	0.0000	ROE	≤	0.3420	5.32	4.97%	43	80.58%	25.08%	7.997	2.789
0.4	20	9.10	0.0000	MOM_6(-3m)	≥	-0.1438	5.22	4.88%	42	80.83%	24.99%	7.999	2.807
0.4	21	8.86	0.0000	POS_OP	≥	4.0000	5.20	4.86%	41	82.01%	25.55%	7.776	2.791
0.4	22	8.70	0.0000	CH_ASSTURN(-6m)	≥	-0.0316	4.67	4.36%	37	82.62%	24.96%	8.165	2.881
0.4	23	8.31	0.0000	CH_ARISALES	≤	0.2437	4.32	4.03%	36	83.43%	25.92%	7.623	2.807
0.4	24	7.93	0.0000	DY(-12m)	≥	0.0229	4.10	3.83%	32	86.71%	26.09%	8.024	2.912
0.4	25	7.85	0.0000	EY(-12m)	≥	0.0971	3.83	3.58%	31	86.32%	26.11%	7.845	2.894
0.4	26	7.69	0.0000	ROE(-9m)	≥	-0.0748	3.78	3.54%	30	86.39%	25.95%	7.866	2.915
0.4	27	7.53	0.0000	EY(-9m)	≥	0.0034	3.55	3.32%	28	85.83%	26.73%	7.229	2.808
0.4	28	7.41	0.0000	DY(-9m)	≥	0.0018	3.33	3.12%	26	84.60%	26.83%	6.894	2.752
0.4	29	7.24	0.0000	NTC	≥	12.7478	3.10	2.90%	26	84.47%	27.56%	6.441	2.674
0.4	30	6.96	0.0000	NOSHARES	≤	178388	2.82	2.63%	25	83.87%	26.67%	6.704	2.740
0.4	31	6.85	0.0000	CAPGEAR	≥	0.0269	2.52	2.35%	25	85.80%	32.15%	4.774	2.331
0.4	32	6.45	0.0000	CH_INVITA	≥	-0.0139	2.28	2.13%	22	83.73%	32.36%	4.436	2.253
0.4	33	6.10	0.0000	ROE(-12m)	≥	0.0368	2.22	2.07%	19	81.49%	31.67%	4.341	2.242
0.4	34	5.69	0.0000	CH_SALES(-12m)	≥	0.0716	1.88	1.76%	16	82.19%	36.58%	3.273	1.964
0.4	35	5.54	0.0000	CH_DPS(-12m)	≥	-0.5693	1.83	1.71%	16	82.88%	37.06%	3.209	1.955
0.4	36	5.30	0.0000	CH_DPS(-9m)	≥	-0.4286	1.70	1.59%	13	84.22%	38.00%	3.117	1.937
0.4	37	5.14	0.0000	CH_INVTURN(-6m)	≥	-2.3977	1.48	1.39%	13	84.99%	38.15%	3.118	1.948
0.4	38	5.06	0.0000	CH_INVTURN(-12m)	≥	-0.1859	1.45	1.36%	12	83.64%	38.01%	3.011	1.920
0.4	39	4.42	0.0000	CH_QUICK	≤	0.0989	1.15	1.07%	5	69.64%	40.59%	1.812	1.457
0.4	40	4.32	0.0000	GM(-12m)	≥	-0.0822	0.95	0.89%	4	67.27%	40.75%	1.661	1.393
0.4	41	3.63	0.0002	EARNG_24(-9m)	≥	-0.1156	0.80	0.75%	3	64.10%	38.93%	1.636	1.375
0.4	42	3.41	0.0004	CH_DEP	≤	0.2475	0.75	0.70%	1	61.20%	34.81%	1.846	1.453
0.4	43	2.80	0.0026	SDEV_VOL(-12m)	≥	-1.2656	0.65	0.61%	1	58.39%	34.01%	1.743	1.433
0.4	44	2.49	0.0065	SALEStCASH	≥	-28.0377	0.37	0.34%	0	51.42%	19.76%	3.963	2.147
0.4	45	2.31	0.0105	GFORECAST_12	≤	2.0550	0.35	0.33%	0	52.70%	19.04%	4.441	2.307
0.4	46	2.11	0.0173	REVISION_24	≤	0.3213	0.35	0.33%	0	51.26%	19.04%	4.163	2.226
0.4	47	1.62	0.0528	SDEV_VOL(-6m)	≥	-0.9470	0.30	0.28%	0	47.38%	15.72%	5.171	2.425
0.4	48	0.80	0.2114	SDEV_VOL(-9m)	≥	-1.4093	0.30	0.28%	0	46.06%	15.72%	4.843	2.353

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**47.63%**	*3584%*	*903*
2	**28.54%**	*930%*	*391*	**70.86%**	*10126%*	*1715*	**76.77%**	*9042%*	*1432*	**91.51%**	*8007%*	*1050*	**61.14%**	*2425%*	*476*
3	**40.56%**	*1014%*	*300*	**67.45%**	*7340%*	*1306*	**83.48%**	*8515%*	*1224*	**86.84%**	*5927%*	*819*	**76.08%**	*2504%*	*395*
4	**41.92%**	*1013%*	*290*	**71.89%**	*7416%*	*1238*	**84.12%**	*8538%*	*1218*	**86.12%**	*5727%*	*798*	**77.82%**	*2542%*	*392*
5	**42.66%**	*1013%*	*285*	**72.01%**	*7333%*	*1222*	**83.65%**	*8407%*	*1206*	**75.78%**	*4704%*	*745*	**63.93%**	*1285%*	*286*
6	**54.33%**	*1087%*	*240*	**74.85%**	*6717%*	*1077*	**81.02%**	*6387%*	*946*	**67.75%**	*3506%*	*621*	**49.01%**	*1111%*	*272*
7	**54.44%**	*1007%*	*222*	**77.23%**	*6075%*	*944*	**87.01%**	*6344%*	*875*	**65.20%**	*3173%*	*584*	**49.93%**	*1111%*	*267*
8	**55.84%**	*963%*	*207*	**76.36%**	*5683%*	*893*	**89.26%**	*5951%*	*800*	**67.79%**	*3129%*	*554*	**52.37%**	*1126%*	*258*
9	**55.38%**	*928%*	*201*	**77.82%**	*5596%*	*863*	**89.26%**	*5951%*	*800*	**67.79%**	*3129%*	*554*	**52.37%**	*1126%*	*258*
10	**56.66%**	*940%*	*199*	**78.27%**	*5329%*	*817*	**90.00%**	*5910%*	*788*	**65.84%**	*2990%*	*545*	**52.86%**	*1123%*	*255*
11	**56.66%**	*940%*	*199*	**78.89%**	*5167%*	*786*	**90.93%**	*5933%*	*783*	**65.84%**	*2990%*	*545*	**52.86%**	*1123%*	*255*
12	**56.66%**	*940%*	*199*	**78.89%**	*5167%*	*786*	**90.40%**	*5876%*	*780*	**66.62%**	*2976%*	*536*	**52.86%**	*1123%*	*255*
13	**56.66%**	*940%*	*199*	**78.89%**	*5167%*	*786*	**89.67%**	*5755%*	*771*	**67.09%**	*2980%*	*533*	**52.86%**	*1123%*	*255*
14	**56.66%**	*940%*	*199*	**78.07%**	*5016%*	*771*	**89.89%**	*5708%*	*762*	**67.09%**	*2980%*	*533*	**52.86%**	*1123%*	*255*
15	**56.66%**	*940%*	*199*	**78.07%**	*5016%*	*771*	**89.58%**	*5547%*	*743*	**67.76%**	*2981%*	*528*	**52.86%**	*1123%*	*255*
16	**56.66%**	*940%*	*199*	**78.07%**	*5016%*	*771*	**86.33%**	*5064%*	*704*	**75.44%**	*3112%*	*495*	**52.86%**	*1123%*	*255*
17	**71.08%**	*912%*	*154*	**79.65%**	*4176%*	*630*	**96.26%**	*4500%*	*561*	**81.99%**	*2767%*	*405*	**57.91%**	*1110%*	*230*
18	**71.08%**	*912%*	*154*	**78.73%**	*3805%*	*580*	**97.02%**	*4455%*	*551*	**81.99%**	*2767%*	*405*	**57.91%**	*1110%*	*230*
19	**71.08%**	*912%*	*154*	**78.73%**	*3805%*	*580*	**97.02%**	*4455%*	*551*	**74.51%**	*2297%*	*370*	**59.85%**	*1022%*	*205*
20	**76.77%**	*876%*	*137*	**74.65%**	*3073%*	*494*	**99.28%**	*4517%*	*546*	**74.82%**	*2294%*	*368*	**59.03%**	*959%*	*195*
21	**83.69%**	*851%*	*122*	**75.57%**	*2689%*	*427*	**100.18%**	*4442%*	*532*	**74.82%**	*2294%*	*368*	**59.03%**	*959%*	*195*
22	**107.27%**	*375%*	*42*	**75.11%**	*2422%*	*387*	**100.18%**	*4442%*	*532*	**74.82%**	*2294%*	*368*	**59.03%**	*959%*	*195*
23	**107.27%**	*375%*	*42*	**77.51%**	*2364%*	*366*	**102.77%**	*3760%*	*439*	**76.34%**	*2303%*	*362*	**59.03%**	*959%*	*195*
24	**107.27%**	*375%*	*42*	**74.27%**	*1962%*	*317*	**106.82%**	*3570%*	*401*	**80.52%**	*1691%*	*252*	**64.17%**	*813%*	*152*
25	**107.27%**	*375%*	*42*	**75.12%**	*1790%*	*286*	**107.81%**	*3558%*	*396*	**74.86%**	*1516%*	*243*	**63.46%**	*788%*	*149*
26	**101.85%**	*306%*	*36*	**75.37%**	*1608%*	*256*	**107.81%**	*3558%*	*396*	**74.86%**	*1516%*	*243*	**63.46%**	*788%*	*149*
27	**101.85%**	*306%*	*36*	**75.37%**	*1608%*	*256*	**107.81%**	*3558%*	*396*	**74.52%**	*1304%*	*210*	**56.86%**	*692%*	*146*
28	**101.85%**	*306%*	*36*	**75.37%**	*1608%*	*256*	**107.81%**	*3558%*	*396*	**62.68%**	*987%*	*189*	**61.44%**	*732%*	*143*
29	**74.92%**	*131%*	*21*	**77.52%**	*1518%*	*235*	**107.81%**	*3558%*	*396*	**62.68%**	*987%*	*189*	**61.44%**	*732%*	*143*
30	**39.75%**	*13%*	*4*	**79.92%**	*1359%*	*204*	**107.81%**	*3558%*	*396*	**54.07%**	*820%*	*182*	**61.57%**	*708%*	*138*
31	**13.67%**	*3%*	*3*	**88.82%**	*1073%*	*145*	**108.96%**	*3487%*	*384*	**54.07%**	*820%*	*182*	**61.57%**	*708%*	*138*
32	**13.67%**	*3%*	*3*	**88.82%**	*1073%*	*145*	**107.36%**	*3140%*	*351*	**51.57%**	*769%*	*179*	**61.57%**	*708%*	*138*
33	**13.67%**	*3%*	*3*	**88.82%**	*1073%*	*145*	**98.36%**	*2451%*	*299*	**58.12%**	*654%*	*135*	**61.57%**	*708%*	*138*
34	**13.67%**	*3%*	*3*	**103.61%**	*1071%*	*124*	**97.31%**	*1744%*	*215*	**60.55%**	*666%*	*132*	**61.57%**	*708%*	*138*
35	**13.67%**	*3%*	*3*	**103.61%**	*1071%*	*124*	**97.31%**	*1744%*	*215*	**61.05%**	*666%*	*131*	**60.23%**	*577%*	*115*
36	**13.67%**	*3%*	*3*	**111.02%**	*851%*	*92*	**102.38%**	*1698%*	*199*	**59.32%**	*588%*	*119*	**52.32%**	*397%*	*91*
37	**13.67%**	*3%*	*3*	**111.02%**	*851%*	*92*	**102.38%**	*1698%*	*199*	**60.25%**	*532%*	*106*	**47.23%**	*315%*	*80*
38	**13.67%**	*3%*	*3*	**111.02%**	*851%*	*92*	**101.12%**	*1660%*	*197*	**54.08%**	*433%*	*96*	**47.23%**	*315%*	*80*
39	**13.67%**	*3%*	*3*	**95.21%**	*611%*	*77*	**86.69%**	*921%*	*129*	**47.78%**	*378%*	*95*	**47.23%**	*315%*	*80*
40	**13.67%**	*3%*	*3*	**95.21%**	*611%*	*77*	**86.69%**	*921%*	*129*	**39.16%**	*281%*	*86*	**41.97%**	*269%*	*77*
41	**0.00%**	*0%*	*0*	**150.65%**	*264%*	*21*	**81.61%**	*789%*	*116*	**39.16%**	*281%*	*86*	**41.97%**	*269%*	*77*
42	**0.00%**	*0%*	*0*	**189.64%**	*95%*	*6*	**88.62%**	*702%*	*95*	**39.16%**	*281%*	*86*	**41.97%**	*269%*	*77*
43	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**107.15%**	*152%*	*17*	**56.13%**	*248%*	*53*	**46.96%**	*243%*	*62*
44	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**57.44%**	*220%*	*46*	**46.96%**	*243%*	*62*
45	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**59.87%**	*180%*	*36*	**48.40%**	*242%*	*60*
46	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**58.23%**	*165%*	*34*	**46.62%**	*194%*	*50*
47	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**58.26%**	*160%*	*33*	**34.08%**	*77%*	*27*
48	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**56.79%**	*85%*	*18*	**35.34%**	*53%*	*18*

Appendix D.9. Results for static comparison level tests: restricted sample

Continued: Comparison level = 45 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.45	1	2.89	0.0019	MTB	≤ 0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.45	2	7.46	0.0000	CH_TA(-12m)	≤ 0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.45	3	8.47	0.0000	CH_INVITA(-12m)	≥ -0.0248	13.60	12.71%	78	75.08%	37.79%	3.863	1.701
0.45	4	9.08	0.0000	CH_ASSTURN(-6m)	≥ -0.0970	10.13	9.47%	60	77.25%	40.11%	3.556	1.658
0.45	5	9.33	0.0000	PRETAX_PM	≤ 0.1034	8.30	7.76%	60	84.06%	40.82%	3.989	1.797
0.45	6	9.38	0.0000	CH_TA	≤ 0.3777	7.88	7.37%	60	84.63%	40.99%	3.951	1.803
0.45	7	9.34	0.0000	CH_TA(-6m)	≤ 0.3085	7.87	7.35%	60	84.69%	40.98%	3.901	1.806
0.45	8	9.29	0.0000	OPINCITA	≤ 0.2469	7.85	7.34%	59	84.54%	40.85%	3.835	1.803
0.45	9	9.19	0.0000	POS_ROE	≥ 3.0000	7.82	7.31%	59	84.57%	40.96%	3.782	1.804
0.45	10	9.08	0.0000	CH_INVISALES(-9m)	≤ 0.3021	7.02	6.56%	54	82.33%	27.40%	7.893	2.614
0.45	11	9.30	0.0000	CH_ASSTURN(-12m)	≥ -0.1046	6.60	6.17%	51	79.84%	23.77%	9.718	2.907
0.45	12	9.30	0.0000	MOM_3(-9m)	≥ -0.2761	6.58	6.15%	51	80.41%	23.79%	9.708	2.929
0.45	13	9.29	0.0000	MOM_3(-6m)	≥ -0.2988	6.22	5.81%	48	80.48%	24.01%	9.411	2.904
0.45	14	9.27	0.0000	CH_ASSTURN	≥ -0.1652	5.98	5.59%	48	80.93%	24.18%	9.261	2.904
0.45	15	9.18	0.0000	MOM_6(-6m)	≥ -0.3419	5.90	5.51%	47	80.71%	24.22%	9.063	2.891
0.45	16	9.09	0.0000	CH_TA(-9m)	≤ 0.1665	5.68	5.31%	47	80.73%	24.48%	8.753	2.860
0.45	17	8.89	0.0000	POS_NET	≥ 6.0000	5.45	5.09%	45	79.50%	24.69%	8.236	2.786
0.45	18	8.63	0.0000	NOSHARES	≤ 178388	5.15	4.81%	43	79.00%	24.92%	7.883	2.741
0.45	19	8.34	0.0000	ROE	≤ 0.3420	4.88	4.56%	39	77.92%	25.41%	7.280	2.644
0.45	20	8.18	0.0000	ROA	≤ 0.1197	4.58	4.28%	39	78.63%	25.62%	7.204	2.649
0.45	21	7.83	0.0000	MOM_6(-3m)	≥ -0.1438	4.48	4.19%	38	78.74%	25.52%	7.185	2.662
0.45	22	7.63	0.0000	POS_OP	≥ 8.0000	4.00	3.74%	34	82.57%	28.84%	6.101	2.491
0.45	23	7.25	0.0000	ROE(-12m)	≥ -0.1618	3.65	3.41%	33	83.49%	30.84%	5.388	2.362
0.45	24	7.23	0.0000	CH_SALES(-9m)	≥ -0.0714	3.43	3.21%	33	84.14%	31.98%	5.031	2.298
0.45	25	7.17	0.0000	CH_ARISALES	≤ 0.2437	3.23	3.02%	33	84.20%	32.07%	4.951	2.294
0.45	26	6.84	0.0000	DY(-12m)	≥ 0.0229	3.02	2.82%	29	88.43%	33.39%	4.973	2.327
0.45	27	6.82	0.0000	EY(-12m)	≥ 0.0971	2.78	2.60%	29	89.50%	33.99%	4.859	2.317
0.45	28	6.64	0.0000	ROE(-9m)	≥ -0.0748	2.73	2.55%	28	89.73%	34.48%	4.691	2.290
0.45	29	6.47	0.0000	DY(-9m)	≥ 0.0229	2.50	2.34%	26	91.21%	34.93%	4.671	2.307
0.45	30	6.40	0.0000	EY(-9m)	≥ 0.1158	2.48	2.32%	25	90.57%	35.11%	4.508	2.277
0.45	31	6.26	0.0000	CH_INVITA	≥ -0.0139	2.27	2.12%	23	89.28%	35.60%	4.213	2.211
0.45	32	6.07	0.0000	CH_DPS(-12m)	≥ -0.5693	2.20	2.06%	23	90.21%	36.17%	4.122	2.199
0.45	33	5.75	0.0000	OPINCITA(-12m)	≥ 0.0168	2.13	1.99%	20	86.23%	35.74%	3.815	2.120
0.45	34	5.37	0.0000	CH_INVTURN(-12m)	≥ -2.3977	1.87	1.74%	19	86.90%	35.83%	3.814	2.129
0.45	35	5.19	0.0000	CH_INVTURN(-6m)	≥ -2.3977	1.83	1.71%	19	86.70%	35.87%	3.749	2.121
0.45	36	5.16	0.0000	CH_DPS(-9m)	≥ -0.4286	1.73	1.62%	16	87.64%	36.75%	3.611	2.095
0.45	37	4.81	0.0000	NTC	≥ 12.7478	1.48	1.39%	13	84.99%	38.15%	3.118	1.948
0.45	38	4.43	0.0000	CH_SALES(-12m)	≥ 0.1431	0.92	0.86%	12	97.13%	45.95%	2.776	1.865
0.45	39	3.72	0.0001	CH_QUICK	≤ 0.0110	0.62	0.58%	5	80.29%	48.99%	1.652	1.405
0.45	40	3.60	0.0002	GM(-12m)	≥ -0.0822	0.58	0.55%	4	77.44%	48.64%	1.543	1.358
0.45	41	2.82	0.0024	EARNG_24(-9m)	≥ -0.1156	0.43	0.40%	3	76.13%	48.86%	1.463	1.314
0.45	42	2.53	0.0057	CAPGEAR	≥ 0.1317	0.38	0.36%	1	73.61%	44.45%	1.636	1.379
0.45	43	1.61	0.0542	EARNG_24(-12m)	≥ 0.2339	0.37	0.34%	1	65.76%	45.37%	1.242	1.173
0.45	44	0.27	0.3947	SDEV_VOL(-9m)	≥ -1.4093	0.28	0.26%	0	51.75%	46.83%	0.714	0.831

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**47.63%**	*3584%*	*903*
2	**28.54%**	*930%*	*391*	**70.86%**	*10126%*	*1715*	**76.77%**	*9042%*	*1432*	**91.51%**	*8007%*	*1050*	**61.14%**	*2425%*	*476*
3	**40.56%**	*1014%*	*300*	**67.45%**	*7340%*	*1306*	**83.48%**	*8515%*	*1224*	**86.84%**	*5927%*	*819*	**76.08%**	*2504%*	*395*
4	**53.04%**	*1012%*	*229*	**71.25%**	*6359%*	*1071*	**87.38%**	*6859%*	*942*	**68.00%**	*3502%*	*618*	**103.72%**	*2662%*	*308*
5	**63.54%**	*927%*	*175*	**73.94%**	*5010%*	*813*	**97.49%**	*6247%*	*769*	**71.76%**	*3157%*	*528*	**112.31%**	*2649%*	*283*
6	**64.29%**	*889%*	*166*	**74.69%**	*4911%*	*789*	**97.93%**	*6251%*	*766*	**71.76%**	*3157%*	*528*	**112.31%**	*2649%*	*283*
7	**64.29%**	*889%*	*166*	**74.69%**	*4911%*	*789*	**97.42%**	*6194%*	*763*	**72.65%**	*3142%*	*519*	**112.31%**	*2649%*	*283*
8	**64.29%**	*889%*	*166*	**74.69%**	*4911%*	*789*	**96.65%**	*6073%*	*754*	**73.18%**	*3147%*	*516*	**112.31%**	*2649%*	*283*
9	**64.29%**	*889%*	*166*	**74.69%**	*4911%*	*789*	**96.65%**	*6073%*	*754*	**71.43%**	*2947%*	*495*	**115.14%**	*2687%*	*280*
10	**64.29%**	*889%*	*166*	**74.33%**	*4583%*	*740*	**103.45%**	*5888%*	*683*	**70.78%**	*2772%*	*470*	**82.01%**	*1574%*	*245*
11	**69.25%**	*900%*	*156*	**78.31%**	*4385%*	*672*	**98.18%**	*5441%*	*665*	**70.78%**	*2772%*	*470*	**57.30%**	*1113%*	*233*
12	**69.25%**	*900%*	*156*	**79.08%**	*4224%*	*641*	**99.35%**	*5465%*	*660*	**70.78%**	*2772%*	*470*	**57.30%**	*1113%*	*233*
13	**71.08%**	*912%*	*154*	**79.80%**	*3957%*	*595*	**99.22%**	*5284%*	*639*	**69.70%**	*2660%*	*458*	**57.91%**	*1110%*	*230*
14	**71.08%**	*912%*	*154*	**79.80%**	*3957%*	*595*	**99.90%**	*5145%*	*618*	**71.37%**	*2635%*	*443*	**57.91%**	*1110%*	*230*
15	**71.08%**	*912%*	*154*	**78.73%**	*3805%*	*580*	**100.45%**	*5098%*	*609*	**71.37%**	*2635%*	*443*	**57.91%**	*1110%*	*230*
16	**71.08%**	*912%*	*154*	**78.73%**	*3805%*	*580*	**100.41%**	*4937%*	*590*	**72.23%**	*2636%*	*438*	**57.91%**	*1110%*	*230*
17	**71.08%**	*912%*	*154*	**79.74%**	*3814%*	*574*	**101.09%**	*4718%*	*560*	**65.24%**	*2294%*	*422*	**57.35%**	*1061%*	*222*
18	**69.58%**	*794%*	*137*	**80.77%**	*3655%*	*543*	**101.09%**	*4718%*	*560*	**59.18%**	*1977%*	*401*	**60.34%**	*1101%*	*219*
19	**69.58%**	*794%*	*137*	**80.77%**	*3655%*	*543*	**101.09%**	*4718%*	*560*	**49.43%**	*1508%*	*366*	**62.71%**	*1014%*	*194*
20	**69.22%**	*784%*	*136*	**83.64%**	*3370%*	*484*	**101.75%**	*4647%*	*548*	**49.43%**	*1508%*	*366*	**62.71%**	*1014%*	*194*
21	**75.51%**	*749%*	*119*	**79.53%**	*2638%*	*398*	**104.07%**	*4709%*	*543*	**49.61%**	*1505%*	*364*	**62.00%**	*951%*	*184*
22	**107.37%**	*716%*	*80*	**86.62%**	*2192%*	*304*	**101.80%**	*3733%*	*440*	**59.17%**	*1657%*	*336*	**62.00%**	*951%*	*184*
23	**107.37%**	*716%*	*80*	**90.46%**	*2133%*	*283*	**105.50%**	*3051%*	*347*	**60.55%**	*1665%*	*330*	**62.00%**	*951%*	*184*
24	**127.10%**	*731%*	*69*	**89.65%**	*2017%*	*270*	**105.50%**	*3051%*	*347*	**60.55%**	*1665%*	*330*	**62.00%**	*951%*	*184*
25	**127.10%**	*731%*	*69*	**89.65%**	*2017%*	*270*	**104.31%**	*2981%*	*343*	**61.72%**	*1656%*	*322*	**62.00%**	*951%*	*184*
26	**127.10%**	*731%*	*69*	**87.70%**	*1615%*	*221*	**109.83%**	*2792%*	*305*	**59.10%**	*1044%*	*212*	**68.44%**	*804%*	*141*
27	**127.10%**	*731%*	*69*	**91.17%**	*1444%*	*190*	**111.18%**	*2780%*	*300*	**59.10%**	*1044%*	*212*	**68.44%**	*804%*	*141*
28	**125.89%**	*661%*	*63*	**94.58%**	*1261%*	*160*	**111.18%**	*2780%*	*300*	**59.10%**	*1044%*	*212*	**68.44%**	*804%*	*141*
29	**125.89%**	*661%*	*63*	**94.58%**	*1261%*	*160*	**110.96%**	*2663%*	*288*	**63.37%**	*819%*	*155*	**61.67%**	*708%*	*138*
30	**125.89%**	*661%*	*63*	**94.58%**	*1261%*	*160*	**109.74%**	*2542%*	*278*	**63.18%**	*806%*	*153*	**61.67%**	*708%*	*138*
31	**125.89%**	*661%*	*63*	**94.58%**	*1261%*	*160*	**108.99%**	*2316%*	*255*	**60.60%**	*768%*	*152*	**61.67%**	*708%*	*138*
32	**128.34%**	*631%*	*59*	**95.67%**	*1211%*	*152*	**108.99%**	*2316%*	*255*	**61.04%**	*768%*	*151*	**60.23%**	*577%*	*115*
33	**128.34%**	*631%*	*59*	**95.67%**	*1211%*	*152*	**97.31%**	*1744%*	*215*	**61.05%**	*666%*	*131*	**60.23%**	*577%*	*115*
34	**128.34%**	*631%*	*59*	**95.67%**	*1211%*	*152*	**97.31%**	*1744%*	*215*	**60.26%**	*532%*	*106*	**47.23%**	*315%*	*80*
35	**121.63%**	*487%*	*48*	**101.11%**	*1171%*	*139*	**97.31%**	*1744%*	*215*	**60.26%**	*532%*	*106*	**47.23%**	*315%*	*80*
36	**116.35%**	*398%*	*41*	**107.51%**	*914%*	*102*	**102.38%**	*1698%*	*199*	**60.25%**	*532%*	*106*	**47.23%**	*315%*	*80*
37	**13.67%**	*3%*	*3*	**111.02%**	*851%*	*92*	**102.38%**	*1698%*	*199*	**60.25%**	*532%*	*106*	**47.23%**	*315%*	*80*
38	**13.67%**	*3%*	*3*	**111.02%**	*851%*	*92*	**102.38%**	*1698%*	*199*	**47.80%**	*167%*	*42*	**0.00%**	*0%*	*0*
39	**13.67%**	*3%*	*3*	**96.21%**	*611%*	*77*	**87.84%**	*959%*	*131*	**33.04%**	*113%*	*41*	**0.00%**	*0%*	*0*
40	**13.67%**	*3%*	*3*	**96.21%**	*611%*	*77*	**85.69%**	*921%*	*129*	**5.13%**	*13%*	*31*	**0.00%**	*0%*	*0*
41	**0.00%**	*0%*	*0*	**150.65%**	*264%*	*21*	**81.61%**	*789%*	*116*	**5.13%**	*13%*	*31*	**0.00%**	*0%*	*0*
42	**0.00%**	*0%*	*0*	**189.64%**	*95%*	*6*	**88.62%**	*702%*	*95*	**5.13%**	*13%*	*31*	**0.00%**	*0%*	*0*
43	**0.00%**	*0%*	*0*	**131.03%**	*33%*	*3*	**91.06%**	*440%*	*58*	**-6.54%**	*-13%*	*23*	**0.00%**	*0%*	*0*
44	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**93.03%**	*186%*	*24*	**-30.81%**	*-31%*	*12*	**0.00%**	*0%*	*0*

Appendix D.9. Results for static comparison level tests: restricted sample

Continued: Comparison level = 50 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.5	1	1.39	0.0830	OPINCITA	≤	-0.0455	7.35	6.87%	87	76.31%	57.14%	1.793	1.150
0.5	2	4.93	0.0000	POS_NET	≥	18.0000	4.12	3.85%	68	118.59%	93.35%	1.581	1.157
0.5	3	6.34	0.0000	CH_TA(-9m)	≤	0.3757	3.42	3.19%	65	146.64%	105.32%	1.866	1.291
0.5	4	6.62	0.0000	CH_INVTURN(-6m)	≥	-2.3977	3.10	2.90%	64	163.67%	120.83%	1.737	1.267
0.5	5	6.65	0.0000	DY	≤	0.0036	2.85	2.66%	64	168.73%	125.10%	1.696	1.265
0.5	6	6.62	0.0000	CH_DEP	≤	0.5228	2.75	2.57%	62	175.59%	120.40%	1.952	1.371
0.5	7	6.56	0.0000	ACCITA	≤	0.0884	2.75	2.57%	61	175.94%	119.02%	1.977	1.390
0.5	8	6.45	0.0000	NOSHARES	≤	162222	2.17	2.02%	54	190.05%	151.12%	1.409	1.187
0.5	9	6.30	0.0000	PRETAX_PM	≤	-0.1054	1.93	1.81%	51	192.31%	154.00%	1.369	1.180
0.5	10	6.03	0.0000	CH_ASSTURN	≥	-0.1652	1.92	1.79%	46	209.44%	142.62%	1.866	1.395
0.5	11	5.83	0.0000	CH_ASSTURN(-6m)	≥	-0.2930	1.83	1.71%	43	214.56%	133.06%	2.217	1.532
0.5	12	5.59	0.0000	CH_ASSTURN(-12m)	≥	-0.3121	1.38	1.29%	39	204.86%	125.77%	2.232	1.542
0.5	13	5.20	0.0000	CH_INVITA(-12m)	≥	-0.0248	1.18	1.11%	32	232.66%	78.66%	7.253	2.823
0.5	14	4.85	0.0000	MTB	≤	3.6700	1.10	1.03%	29	244.43%	81.34%	7.385	2.876
0.5	15	4.61	0.0000	CH_TA(-12m)	≤	0.2605	1.05	0.98%	26	229.70%	86.59%	5.679	2.532
0.5	16	4.06	0.0000	SALESICASH	≥	13.7916	0.77	0.72%	20	203.12%	97.25%	3.474	1.980
0.5	17	3.46	0.0003	CH_TA(-6m)	≤	-0.1149	0.67	0.62%	15	204.57%	137.50%	1.740	1.410
0.5	18	2.71	0.0033	EARNG_12	≥	-0.0153	0.38	0.36%	9	186.12%	356.11%	0.212	0.494
0.5	19	2.31	0.0104	MOM_3(-6m)	≥	-0.2988	0.32	0.30%	7	214.84%	389.37%	0.233	0.526
0.5	20	1.89	0.0296	MOM_6(-6m)	≥	-0.3419	0.28	0.26%	5	236.86%	408.29%	0.255	0.555
0.5	21	1.62	0.0528	MOM_3(-9m)	≥	-0.2761	0.27	0.25%	4	237.35%	420.13%	0.238	0.541
0.5	22	0.80	0.2114	EARNG_24(-9m)	≥	-0.1156	0.23	0.22%	2	176.69%	450.17%	0.114	0.370

No	2000			2001			2002			2003			2004		
1	**4.32%**	*128%*	*356*	**42.93%**	*3706%*	*1036*	**142.55%**	*9491%*	*799*	**81.06%**	*4614%*	*683*	**85.51%**	*3121%*	*438*
2	**-18.60%**	*-229%*	*148*	**83.69%**	*4010%*	*575*	**214.84%**	*8271%*	*462*	**98.83%**	*2965%*	*360*	**131.67%**	*2535%*	*231*
3	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**207.25%**	*7668%*	*444*	**98.83%**	*2965%*	*360*	**141.36%**	*2580%*	*219*
4	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**227.61%**	*7568%*	*399*	**126.36%**	*2369%*	*225*	**151.44%**	*2158%*	*171*
5	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**232.58%**	*7539%*	*389*	**142.38%**	*2219%*	*187*	**151.44%**	*2158%*	*171*
6	**27.54%**	*34%*	*15*	**144.27%**	*3547%*	*295*	**231.77%**	*7494%*	*388*	**142.38%**	*2219%*	*187*	**151.44%**	*2158%*	*171*
7	**27.54%**	*34%*	*15*	**144.27%**	*3547%*	*295*	**231.77%**	*7494%*	*388*	**133.85%**	*2019%*	*181*	**160.95%**	*2213%*	*165*
8	**27.54%**	*34%*	*15*	**154.70%**	*3610%*	*280*	**253.33%**	*7030%*	*333*	**196.12%**	*2386%*	*146*	**105.65%**	*1004%*	*114*
9	**27.54%**	*34%*	*15*	**160.73%**	*3429%*	*256*	**264.25%**	*6801%*	*321*	**196.12%**	*2386%*	*146*	**105.65%**	*1004%*	*114*
10	**27.54%**	*34%*	*15*	**160.73%**	*3429%*	*256*	**266.71%**	*6801%*	*306*	**296.87%**	*1089%*	*44*	**147.12%**	*1214%*	*99*
11	**27.54%**	*34%*	*15*	**160.73%**	*3429%*	*256*	**266.71%**	*6801%*	*306*	**-8.79%**	*-21%*	*29*	**346.09%**	*1557%*	*54*
12	**27.54%**	*34%*	*15*	**160.73%**	*3429%*	*256*	**266.71%**	*6801%*	*306*	**-11.09%**	*-21%*	*23*	**0.00%**	*0%*	*0*
13	**27.54%**	*34%*	*15*	**163.90%**	*3292%*	*241*	**336.54%**	*5536%*	*198*	**-127.52%**	*-21%*	*2*	**0.00%**	*0%*	*0*
14	**27.54%**	*34%*	*15*	**161.17%**	*3156%*	*235*	**405.50%**	*4900%*	*145*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
15	**27.54%**	*34%*	*15*	**152.09%**	*2788%*	*220*	**396.04%**	*4092%*	*124*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
16	**27.54%**	*34%*	*15*	**147.84%**	*2008%*	*163*	**314.48%**	*2857%*	*109*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
17	**27.54%**	*34%*	*15*	**162.97%**	*1603%*	*118*	**302.87%**	*2070%*	*82*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
18	**27.54%**	*34%*	*15*	**171.69%**	*1544%*	*108*	**374.14%**	*655%*	*21*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
19	**0.00%**	*0%*	*1*	**172.64%**	*1064%*	*74*	**374.14%**	*655%*	*21*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
20	**0.00%**	*0%*	*0*	**180.33%**	*766%*	*51*	**374.14%**	*655%*	*21*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
21	**0.00%**	*0%*	*0*	**169.60%**	*532%*	*40*	**392.86%**	*655%*	*20*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
22	**0.00%**	*0%*	*0*	**112.89%**	*198%*	*21*	**266.02%**	*333%*	*15*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*

Appendix D.10. Results for dynamic comparison level tests: restricted sample

The tables below show the results from the stepwise median comparison test where the sample has been restricted to the period from 2000 until 2004. Each table that follows provides the results from this test while using a initial comparison level (ranging from 20 to 50 percent) and increasing this comparison level to 100 percent within a prespecified length. This length is set at five filters for Part A of this appendix, ten filters for Part B and fifteen filters for Part C. The table shows the filtering variables and their corresponding filter levels as each subsequent filter is added. For each combination of filters the z-statistic from the Wilcoxon signed ranks test comparing the median return of the filtered portfolio to the relevant comparison level along with its p-value is shown. The tables also show the average number of companies held in any month over the period from 2000 until 2004, and the amount of companies held as a proportion of the entire sample. The number of winners picked out of a possible 546 insample winners is indicated. Finally, the tables show the average annual return and annualized standard deviation of monthly portfolio returns of each filtered portfolio over the period from January 2000 until December 2004, as well as the JK statistic and Sharpe ratio.

The tables below also show the calendar time payoffs corresponding to the each of these filters over the entire sample period from January 2000 until December 2004. For each sample year the total return earned by the filtered shares (second column of each year), the number of investment months included in the filtered portfolio (third column of each year) and the corresponding equally-weighted average return for that year are included (first column of each year).

Appendix D.10.A Results for dynamic comparison level tests: restricted sample

Continued: Length = five filters; Initial comparison level = 20 and 25 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.2	1	17.75	0.0000	EY(-9m)	≥	0.1158	65.07	60.81%	335	45.08%	14.63%	11.095	2.352
0.36	2	11.14	0.0000	CH_ARISALES	≤	0.0165	42.67	39.88%	223	59.18%	15.39%	15.671	3.167
0.52	3	6.43	0.0000	CH_TA(-12m)	≤	0.0968	15.15	14.16%	100	75.79%	18.71%	16.119	3.503
0.68	4	5.60	0.0000	POS_NET	≥	20.0000	4.28	4.00%	45	95.82%	29.36%	10.091	2.897
0.84	5	4.56	0.0000	GM	≥	-0.0822	1.95	1.82%	27	114.27%	33.36%	10.901	3.144
1	6	3.44	0.0003	DY(-12m)	≥	0.0536	0.90	0.84%	17	142.20%	39.82%	11.645	3.325
1	7	3.49	0.0003	POS_ROE	≥	23.0000	0.88	0.83%	17	144.58%	39.32%	12.165	3.429
1	8	3.48	0.0003	MOM_3(-9m)	≥	-0.1501	0.87	0.81%	16	148.14%	37.33%	13.965	3.710
1	9	3.41	0.0004	MOM_6(-3m)	≥	-0.0912	0.85	0.79%	15	150.41%	35.77%	15.463	3.939
1	10	3.28	0.0005	MTB	≤	1.1700	0.83	0.78%	14	148.63%	36.10%	14.615	3.850
1	11	3.15	0.0008	MOM_3(-6m)	≥	-0.0962	0.82	0.76%	13	149.04%	37.85%	13.181	3.685
1	12	3.01	0.0013	NOSHARES	≤	65226	0.62	0.58%	12	150.11%	42.06%	10.682	3.344
1	13	2.94	0.0017	DY(-9m)	≥	0.0509	0.60	0.56%	11	157.30%	41.89%	11.665	3.534
1	14	2.80	0.0026	CH_TA(-9m)	≤	0.0968	0.58	0.55%	10	154.69%	42.49%	10.825	3.421
1	15	2.49	0.0065	DY	≤	0.0422	0.55	0.51%	8	159.82%	41.66%	11.858	3.615
1	16	2.31	0.0105	POS_OP	≥	24.0000	0.53	0.50%	7	162.23%	41.94%	11.898	3.648
1	17	1.89	0.0296	MOM_6(-6m)	≥	0.0666	0.47	0.44%	5	177.69%	43.49%	13.105	3.883
1	18	0.80	0.2114	CH_TA(-6m)	≤	0.0968	0.42	0.39%	2	141.75%	44.61%	7.828	2.967

No	2000			2001			2002			2003			2004		
1	**1.63%**	*374%*	*2763*	**42.20%**	*21509%*	*6116*	**42.28%**	*25958%*	*7368*	**59.03%**	*38475%*	*7821*	**55.44%**	*21916%*	*4744*
2	**17.66%**	*1552%*	*1055*	**50.00%**	*11421%*	*2741*	**55.41%**	*14970%*	*3242*	**77.04%**	*26712%*	*4161*	**61.34%**	*16362%*	*3201*
3	**36.85%**	*930%*	*303*	**51.42%**	*4152%*	*969*	**71.06%**	*6212%*	*1049*	**114.79%**	*11555%*	*1208*	**69.82%**	*6557%*	*1127*
4	**122.20%**	*764%*	*75*	**39.84%**	*481%*	*145*	**96.78%**	*3331%*	*413*	**108.30%**	*4161%*	*461*	**95.76%**	*2186%*	*274*
5	**131.60%**	*658%*	*60*	**63.46%**	*190%*	*36*	**0.00%**	*0%*	*0*	**138.28%**	*2812%*	*244*	**95.65%**	*2168%*	*272*
6	**134.48%**	*628%*	*56*	**59.93%**	*140%*	*28*	**0.00%**	*0%*	*0*	**139.66%**	*1023%*	*88*	**179.29%**	*1195%*	*80*
7	**134.48%**	*628%*	*56*	**59.93%**	*140%*	*28*	**0.00%**	*0%*	*0*	**144.64%**	*939%*	*78*	**182.26%**	*1185%*	*78*
8	**146.43%**	*436%*	*36*	**53.01%**	*106%*	*24*	**0.00%**	*0%*	*0*	**144.64%**	*939%*	*78*	**182.26%**	*1185%*	*78*
9	**146.43%**	*436%*	*36*	**53.01%**	*106%*	*24*	**0.00%**	*0%*	*0*	**160.91%**	*830%*	*66*	**182.26%**	*1185%*	*78*
10	**146.43%**	*436%*	*36*	**53.01%**	*106%*	*24*	**0.00%**	*0%*	*0*	**160.91%**	*830%*	*66*	**182.86%**	*1006%*	*66*
11	**146.43%**	*436%*	*36*	**53.01%**	*106%*	*24*	**0.00%**	*0%*	*0*	**144.72%**	*675%*	*56*	**190.87%**	*1018%*	*64*
12	**146.43%**	*436%*	*36*	**53.01%**	*106%*	*24*	**0.00%**	*0%*	*0*	**136.83%**	*513%*	*45*	**199.26%**	*1046%*	*63*
13	**137.02%**	*274%*	*24*	**54.33%**	*54%*	*12*	**0.00%**	*0%*	*0*	**136.83%**	*513%*	*45*	**199.26%**	*1046%*	*63*
14	**137.02%**	*274%*	*24*	**54.33%**	*54%*	*12*	**0.00%**	*0%*	*0*	**138.74%**	*509%*	*44*	**199.51%**	*865%*	*52*
15	**137.02%**	*274%*	*24*	**54.33%**	*54%*	*12*	**0.00%**	*0%*	*0*	**157.47%**	*354%*	*27*	**201.51%**	*756%*	*45*
16	**137.02%**	*274%*	*24*	**54.33%**	*54%*	*12*	**0.00%**	*0%*	*0*	**173.83%**	*290%*	*20*	**203.92%**	*680%*	*40*
17	**142.49%**	*71%*	*6*	**50.87%**	*25%*	*6*	**0.00%**	*0%*	*0*	**173.83%**	*290%*	*20*	**203.92%**	*680%*	*40*
18	**142.49%**	*71%*	*6*	**50.87%**	*25%*	*6*	**0.00%**	*0%*	*0*	**160.07%**	*138%*	*11*	**176.32%**	*191%*	*13*

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.25	1	13.64	0.0000	EY(-12m)	≥	0.1493	49.70	46.45%	288	49.85%	16.09%	10.666	2.433
0.4	2	10.42	0.0000	CH_ARISALES	≤	0.0165	32.35	30.23%	193	66.12%	17.69%	14.414	3.141
0.55	3	6.58	0.0000	CH_ASSTURN(-12m)	≥	-0.1046	22.80	21.31%	152	72.85%	19.52%	13.879	3.192
0.7	4	4.88	0.0000	CH_EBTISALES(-12m)	≥	0.2504	3.40	3.18%	40	113.37%	57.15%	3.720	1.793
0.85	5	5.25	0.0000	NOSHARES	≤	146056	2.90	2.71%	40	134.70%	30.15%	18.559	4.109
1	6	4.27	0.0000	PRETAX_PM	≤	0.1034	2.28	2.13%	40	141.87%	32.08%	17.914	4.083
1	7	4.66	0.0000	CH_ASSTURN(-6m)	≥	-0.0970	2.18	2.04%	39	147.83%	32.06%	19.185	4.270
1	8	4.91	0.0000	ROE	≤	0.3420	1.82	1.70%	35	159.52%	34.19%	19.343	4.341
1	9	4.89	0.0000	OPINCITA	≤	0.1633	1.48	1.39%	32	174.73%	33.26%	24.164	4.922
1	10	4.81	0.0000	CH_DEP	≤	0.2475	1.28	1.20%	31	174.09%	33.68%	23.060	4.840
1	11	4.75	0.0000	MOM_3(-6m)	≥	-0.0962	1.27	1.18%	30	178.45%	33.86%	23.642	4.945
1	12	4.67	0.0000	MOM_6(-3m)	≥	-0.0912	1.25	1.17%	29	179.51%	34.20%	23.133	4.926
1	13	4.58	0.0000	MOM_6(-6m)	≥	-0.0151	1.23	1.15%	28	177.25%	32.40%	24.801	5.127
1	14	4.50	0.0000	EY(-9m)	≥	0.1720	1.22	1.14%	27	177.91%	33.03%	23.719	5.048
1	15	4.41	0.0000	MTB	≤	3.1700	1.20	1.12%	26	179.17%	33.79%	22.685	4.971
1	16	4.22	0.0000	POS_NET	≥	14.0000	1.17	1.09%	24	180.96%	34.11%	22.414	4.976
1	17	3.93	0.0001	EARNG_12	≥	-0.0153	0.93	0.87%	21	180.69%	34.78%	21.218	4.874
1	18	3.82	0.0001	EARNG_24(-12m)	≥	-0.1674	0.92	0.86%	20	178.17%	34.85%	20.288	4.791
1	19	3.71	0.0001	MOM_3(-9m)	≥	-0.0872	0.92	0.86%	19	180.76%	35.12%	20.305	4.829
1	20	3.48	0.0003	CH_TA(-6m)	≤	0.0968	0.88	0.83%	17	174.86%	35.75%	18.110	4.574
1	21	3.23	0.0006	DY(-9m)	≥	0.0509	0.88	0.83%	15	168.46%	36.16%	16.234	4.336
1	22	2.95	0.0016	CH_TA(-9m)	≤	0.0968	0.82	0.78%	13	155.38%	38.64%	11.950	3.708
1	23	2.80	0.0026	REVISION_12	≤	0.0784	0.62	0.58%	12	151.68%	40.04%	10.480	3.478
1	24	2.63	0.0043	REVISION_24	≤	0.1064	0.60	0.56%	11	153.02%	40.01%	10.554	3.513
1	25	2.45	0.0073	SDEV_VOL(-9m)	≥	-1.4093	0.60	0.56%	10	153.92%	39.66%	10.741	3.568
1	26	2.01	0.0220	DY(-12m)	≥	0.0044	0.57	0.53%	8	129.14%	38.68%	7.861	3.023
1	27	1.75	0.0401	CH_DPS(-12m)	≥	-0.5693	0.53	0.50%	7	121.95%	33.09%	9.470	3.317
1	28	1.47	0.0711	EARNG_24(-9m)	≥	0.0630	0.50	0.47%	5	128.19%	34.50%	9.517	3.351
1	29	1.08	0.1404	CAPGEAR	≥	0.0269	0.30	0.28%	4	117.07%	33.88%	8.138	3.067

No	2000			2001			2002			2003			2004		
1	**0.38%**	*73%*	*2293*	**46.27%**	*17300%*	*4487*	**49.72%**	*20267%*	*4891*	**67.21%**	*29417%*	*5252*	**63.17%**	*15398%*	*2925*
2	**18.97%**	*1445%*	*914*	**53.85%**	*9890%*	*2204*	**65.64%**	*12297%*	*2248*	**88.60%**	*20297%*	*2749*	**71.29%**	*10819%*	*1821*
3	**21.94%**	*803%*	*439*	**59.19%**	*6328%*	*1283*	**71.84%**	*8579%*	*1433*	**91.20%**	*17868%*	*2351*	**71.60%**	*8747%*	*1466*
4	**-24.67%**	*-20%*	*10*	**18.61%**	*212%*	*137*	**112.05%**	*2503%*	*268*	**129.95%**	*4624%*	*427*	**162.94%**	*2091%*	*154*
5	**0.00%**	*0%*	*0*	**31.71%**	*71%*	*27*	**128.87%**	*2202%*	*205*	**133.72%**	*4257%*	*382*	**162.94%**	*2091%*	*154*
6	**0.00%**	*0%*	*0*	**31.71%**	*71%*	*27*	**135.11%**	*2207%*	*196*	**137.86%**	*4228%*	*368*	**186.60%**	*2006%*	*129*
7	**0.00%**	*0%*	*0*	**31.71%**	*71%*	*27*	**135.11%**	*2207%*	*196*	**141.53%**	*3658%*	*311*	**214.34%**	*2036%*	*114*
8	**0.00%**	*0%*	*0*	**31.71%**	*71%*	*27*	**136.21%**	*2191%*	*193*	**156.93%**	*2851%*	*218*	**268.66%**	*1746%*	*78*
9	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**146.21%**	*1328%*	*109*	**159.45%**	*2857%*	*215*	**268.65%**	*1746%*	*78*
10	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**146.21%**	*1328%*	*109*	**156.99%**	*2682%*	*205*	**272.41%**	*1725%*	*76*
11	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.96%**	*1196%*	*97*	**161.73%**	*2601%*	*193*	**272.41%**	*1725%*	*76*
12	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.96%**	*1196%*	*97*	**159.26%**	*2455%*	*185*	**287.43%**	*1725%*	*72*
13	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.96%**	*1196%*	*97*	**160.14%**	*2456%*	*184*	**290.96%**	*1479%*	*61*
14	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.96%**	*1196%*	*97*	**158.69%**	*2313%*	*175*	**302.68%**	*1463%*	*58*
15	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.96%**	*1196%*	*97*	**157.58%**	*2167%*	*165*	**313.99%**	*1465%*	*56*
16	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.96%**	*1196%*	*97*	**165.20%**	*1982%*	*144*	**302.46%**	*1336%*	*53*
17	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**149.69%**	*1197%*	*96*	**158.12%**	*1449%*	*110*	**304.28%**	*1319%*	*52*
18	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**149.69%**	*1197%*	*96*	**162.02%**	*1364%*	*101*	**286.70%**	*1171%*	*49*
19	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.29%**	*1068%*	*87*	**167.40%**	*1367%*	*98*	**286.70%**	*1171%*	*49*
20	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.29%**	*1068%*	*87*	**170.04%**	*1176%*	*83*	**268.14%**	*894%*	*40*
21	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.29%**	*1068%*	*87*	**171.29%**	*1085%*	*76*	**278.11%**	*533%*	*23*
22	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.29%**	*1068%*	*87*	**167.57%**	*908%*	*65*	**228.13%**	*190%*	*10*
23	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**147.29%**	*1068%*	*87*	**170.35%**	*894%*	*63*	**0.00%**	*0%*	*0*
24	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**148.92%**	*1067%*	*86*	**175.23%**	*759%*	*52*	**0.00%**	*0%*	*0*
25	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**149.19%**	*1032%*	*83*	**181.84%**	*652%*	*43*	**0.00%**	*0%*	*0*
26	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**137.15%**	*823%*	*72*	**131.89%**	*330%*	*30*	**0.00%**	*0%*	*0*
27	**0.00%**	*0%*	*0*	**19.31%**	*10%*	*6*	**137.64%**	*803%*	*70*	**97.84%**	*163%*	*20*	**0.00%**	*0%*	*0*
28	**0.00%**	*0%*	*0*	**-12.02%**	*-1%*	*1*	**142.84%**	*607%*	*51*	**97.84%**	*163%*	*20*	**0.00%**	*0%*	*0*
29	**0.00%**	*0%*	*0*	**-12.02%**	*-1%*	*1*	**143.33%**	*561%*	*47*	**24.94%**	*25%*	*12*	**0.00%**	*0%*	*0*

Appendix D.10.A Results for dynamic comparison level tests: restricted sample

Continued: Length = five filters; Initial comparison level = 30 and 35 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.3	1	10.40	0.0000	EY(-12m)	≥	0.1493	49.70	46.45%	288	49.85%	16.09%	10.666	2.433
0.44	2	8.64	0.0000	CH_ARISALES	≤	0.0165	32.35	30.23%	193	66.12%	17.69%	14.414	3.141
0.58	3	5.57	0.0000	EARNG_24(-9m)	≥	0.1821	5.15	4.81%	31	102.56%	25.58%	15.430	3.624
0.72	4	4.86	0.0000	CH_EBTISALES(-12m)	≥	-0.7558	4.32	4.03%	31	115.17%	26.43%	17.925	3.978
0.86	5	4.25	0.0000	POS_ROE	≥	11.0000	1.95	1.82%	24	143.69%	35.06%	15.590	3.789
1	6	3.53	0.0002	CH_DEP	≤	0.1099	1.02	0.95%	20	164.78%	34.20%	21.204	4.508
1	7	3.50	0.0003	ACCITA	≤	0.0654	0.87	0.81%	16	186.26%	35.49%	28.085	5.313
1	8	3.39	0.0004	MTB	≤	2.1700	0.85	0.79%	15	195.33%	34.02%	29.228	5.452
1	9	3.27	0.0008	MOM_3(-6m)	≥	-0.0287	0.83	0.78%	14	199.26%	34.31%	29.494	5.525
1	10	3.14	0.0008	MOM_6(-6m)	≥	-0.1785	0.78	0.73%	13	200.43%	34.67%	28.813	5.499
1	11	2.86	0.0021	NOSHARES	≤	146056	0.57	0.53%	11	197.22%	35.29%	26.546	5.303
1	12	2.71	0.0034	POS_NET	≥	14.0000	0.55	0.51%	10	199.03%	35.57%	26.249	5.313
1	13	2.55	0.0054	EARNG_24(-12m)	≥	-0.1674	0.53	0.50%	9	195.57%	35.47%	25.154	5.232
1	14	2.37	0.0089	MOM_3(-9m)	≥	-0.0872	0.52	0.48%	8	203.27%	35.35%	26.995	5.476
1	15	2.17	0.0150	CH_DPS(-9m)	≥	0.4048	0.50	0.47%	7	197.96%	35.52%	25.024	5.300
1	16	1.94	0.0260	CH_TA(-6m)	≤	0.0968	0.48	0.45%	6	194.51%	35.79%	23.486	5.162
1	17	1.35	0.0888	MOM_6(-3m)	≥	-0.0386	0.48	0.45%	4	181.91%	35.79%	20.279	4.794
1	18	0.80	0.2114	SDEV_VOL	≥	-0.4409	0.47	0.44%	2	175.21%	36.45%	17.910	4.532

No	2000			2001			2002			2003			2004		
1	**0.38%**	*73%*	*2293*	**46.27%**	*17300%*	*4487*	**49.72%**	*20267%*	*4891*	**67.21%**	*29417%*	*5252*	**63.17%**	*15398%*	*2925*
2	**18.97%**	*1445%*	*914*	**53.85%**	*9890%*	*2204*	**55.64%**	*12297%*	*2248*	**88.60%**	*20297%*	*2749*	**71.29%**	*10819%*	*1821*
3	**0.00%**	*0%*	*0*	**107.88%**	*243%*	*27*	**103.50%**	*1104%*	*128*	**90.89%**	*3030%*	*400*	**113.43%**	*3828%*	*405*
4	**0.00%**	*0%*	*0*	**107.88%**	*243%*	*27*	**104.68%**	*1107%*	*127*	**100.02%**	*2634%*	*316*	**135.59%**	*3503%*	*310*
5	**0.00%**	*0%*	*0*	**136.06%**	*169%*	*15*	**106.37%**	*993%*	*112*	**106.53%**	*1767%*	*199*	**254.11%**	*2245%*	*106*
6	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**136.93%**	*510%*	*45*	**109.71%**	*1582%*	*173*	**279.93%**	*2193%*	*94*
7	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**148.19%**	*296%*	*24*	**123.10%**	*913%*	*89*	**284.97%**	*2161%*	*91*
8	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**148.19%**	*296%*	*24*	**124.66%**	*913%*	*88*	**287.32%**	*1915%*	*80*
9	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**148.19%**	*296%*	*24*	**126.63%**	*813%*	*77*	**285.57%**	*1880%*	*79*
10	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**148.19%**	*296%*	*24*	**120.69%**	*714%*	*71*	**295.16%**	*1796%*	*73*
11	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**148.19%**	*296%*	*24*	**119.69%**	*658%*	*66*	**313.90%**	*1413%*	*54*
12	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**148.19%**	*296%*	*24*	**123.08%**	*574%*	*56*	**304.28%**	*1319%*	*52*
13	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**148.19%**	*296%*	*24*	**124.75%**	*489%*	*47*	**286.70%**	*1171%*	*49*
14	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**133.37%**	*167%*	*15*	**134.19%**	*492%*	*44*	**286.70%**	*1171%*	*49*
15	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**133.37%**	*167%*	*15*	**131.93%**	*396%*	*36*	**272.32%**	*1021%*	*45*
16	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**133.37%**	*167%*	*15*	**124.58%**	*301%*	*29*	**268.14%**	*894%*	*40*
17	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**133.37%**	*167%*	*15*	**114.45%**	*210%*	*22*	**278.11%**	*533%*	*23*
18	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**129.12%**	*75%*	*7*	**104.57%**	*113%*	*13*	**252.76%**	*337%*	*16*

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.35	1	7.70	0.0000	MTB	≤	0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.48	2	6.35	0.0000	CH_TA(-12m)	≤	0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.61	3	5.91	0.0000	DY	≤	0.0277	7.90	7.38%	75	103.14%	42.27%	5.756	2.188
0.74	4	6.36	0.0000	NOSHARES	≤	81392	2.57	2.40%	44	130.61%	35.84%	12.546	3.353
0.87	5	5.52	0.0000	CH_SALES(-12m)	≥	-0.0714	2.22	2.07%	43	140.02%	39.06%	11.946	3.321
1	6	4.79	0.0000	CH_INVTURN(-12m)	≥	-2.3977	1.82	1.70%	39	154.65%	47.23%	9.812	3.050
1	7	4.98	0.0000	ROE(-9m)	≥	-0.0748	1.67	1.56%	37	160.40%	49.37%	9.519	3.035
1	8	4.99	0.0000	EY(-12m)	≥	-0.0335	1.57	1.46%	34	169.84%	47.66%	11.282	3.338
1	9	4.92	0.0000	OPINCITA	≤	0.0380	1.33	1.25%	32	175.60%	47.84%	11.798	3.446
1	10	4.67	0.0000	ROE	≤	-0.0036	1.28	1.20%	29	174.60%	46.34%	12.257	3.540
1	11	4.39	0.0000	POS_OP	≥	16.0000	1.23	1.15%	26	167.78%	46.16%	11.243	3.405
1	12	4.09	0.0000	EY(-9m)	≥	0.1346	1.18	1.11%	23	159.76%	48.51%	9.103	3.074
1	13	3.76	0.0001	PRETAX_PM	≤	-0.0010	0.95	0.89%	20	159.12%	52.39%	7.639	2.833
1	14	3.27	0.0006	CH_DPS(-12m)	≥	-0.5693	0.83	0.78%	15	133.89%	58.19%	4.325	2.116
1	15	3.13	0.0009	MOM_3(-6m)	≥	-0.0962	0.82	0.76%	14	130.29%	58.43%	4.009	2.047
1	16	2.98	0.0015	MOM_6(-6m)	≥	-0.3419	0.80	0.75%	13	126.98%	55.91%	4.104	2.079
1	17	2.82	0.0024	CH_ARISALES	≤	-0.0592	0.60	0.56%	12	125.33%	55.50%	4.006	2.064
1	18	2.66	0.0040	MOM_3(-9m)	≥	-0.2131	0.60	0.56%	11	123.57%	55.50%	3.845	2.032
1	19	2.47	0.0068	DY(-9m)	≥	0.0439	0.60	0.56%	10	123.52%	55.50%	3.795	2.031
1	20	2.27	0.0117	DY(-12m)	≥	0.0413	0.60	0.56%	9	123.21%	55.50%	3.729	2.025
1	21	2.01	0.0220	CH_INVISALES(-9m)	≤	-0.1123	0.57	0.53%	7	122.12%	56.80%	3.455	1.963
1	22	1.75	0.0401	MOM_6(-3m)	≥	-0.0912	0.55	0.51%	6	118.83%	57.60%	3.143	1.880
1	23	1.26	0.1042	CH_TA(-6m)	≤	0.0968	0.48	0.45%	4	121.43%	59.62%	3.028	1.858
1	24	0.91	0.1807	SDEV_VOL(-6m)	≥	-0.9470	0.28	0.26%	3	111.40%	37.56%	6.344	2.684

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**47.63%**	*3584%*	*903*
2	**28.54%**	*930%*	*391*	**70.85%**	*10126%*	*1715*	**75.77%**	*9042%*	*1432*	**91.51%**	*8007%*	*1050*	**61.14%**	*2425%*	*476*
3	**76.94%**	*721%*	*114*	**94.72%**	*4452%*	*564*	**97.90%**	*4887%*	*599*	**140.37%**	*5989%*	*512*	**77.20%**	*2001%*	*311*
4	**121.27%**	*616%*	*61*	**145.21%**	*3521%*	*291*	**152.30%**	*3516%*	*277*	**94.46%**	*937%*	*119*	**78.84%**	*683%*	*104*
5	**121.27%**	*616%*	*61*	**163.90%**	*3463%*	*270*	**184.81%**	*2834%*	*184*	**100.37%**	*945%*	*113*	**78.84%**	*683%*	*104*
6	**121.27%**	*616%*	*61*	**163.08%**	*3071%*	*226*	**192.82%**	*2699%*	*168*	**114.16%**	*809%*	*85*	**75.68%**	*227%*	*36*
7	**119.26%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**122.31%**	*836%*	*82*	**75.68%**	*227%*	*36*
8	**119.26%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**101.25%**	*363%*	*43*	**384.84%**	*96%*	*3*
9	**119.26%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**181.14%**	*151%*	*10*	**0.00%**	*0%*	*0*
10	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
11	**144.23%**	*589%*	*49*	**163.60%**	*2125%*	*166*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
12	**144.23%**	*589%*	*49*	**130.77%**	*1449%*	*133*	**191.71%**	*2061%*	*129*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
13	**144.23%**	*589%*	*49*	**111.23%**	*1010%*	*109*	**206.74%**	*2006%*	*117*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
14	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.88%**	*1007%*	*84*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
15	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.03%**	*870%*	*73*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
16	**149.07%**	*559%*	*45*	**105.53%**	*572%*	*65*	**132.70%**	*774%*	*70*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
17	**149.07%**	*559%*	*45*	**107.93%**	*495%*	*55*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
18	**145.43%**	*436%*	*36*	**108.26%**	*469%*	*52*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
19	**145.43%**	*436%*	*36*	**100.32%**	*401%*	*48*	**128.94%**	*645%*	*60*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
20	**145.43%**	*436%*	*36*	**92.46%**	*331%*	*43*	**133.07%**	*588%*	*53*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
21	**145.43%**	*436%*	*36*	**88.63%**	*310%*	*42*	**141.16%**	*353%*	*30*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
22	**145.43%**	*436%*	*36*	**86.52%**	*288%*	*40*	**135.57%**	*226%*	*20*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
23	**145.43%**	*436%*	*36*	**73.56%**	*166%*	*27*	**169.08%**	*127%*	*9*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
24	**146.01%**	*365%*	*30*	**63.72%**	*81%*	*18*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*

Appendix D.10.A Results for dynamic comparison level tests: restricted sample

Continued: Length = five filters; Initial comparison level = 40, 45 and 50 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.4	1	5.33	0.0000	MTB	≤	0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.52	2	4.88	0.0000	CH_TA(-12m)	≤	0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.64	3	5.38	0.0000	DY	≤	0.0277	7.90	7.38%	75	103.14%	42.27%	5.756	2.188
0.76	4	6.18	0.0000	NOSHARES	≤	81392	2.57	2.40%	44	130.61%	35.84%	12.546	3.353
0.88	5	5.44	0.0000	CH_SALES(-12m)	≥	-0.0714	2.22	2.07%	43	140.02%	39.06%	11.946	3.321
1	6	4.79	0.0000	CH_INVTURN(-12m)	≥	-2.3977	1.82	1.70%	39	154.65%	47.23%	9.812	3.050
1	7	4.98	0.0000	ROE(-9m)	≥	-0.0748	1.67	1.56%	37	160.40%	49.37%	9.519	3.035
1	8	4.99	0.0000	EY(-12m)	≥	-0.0335	1.57	1.46%	34	169.84%	47.66%	11.282	3.338
1	9	4.92	0.0000	OPINCITA	≤	0.0380	1.33	1.25%	32	175.60%	47.84%	11.798	3.446
1	10	4.67	0.0000	ROE	≤	-0.0036	1.28	1.20%	29	174.60%	46.34%	12.257	3.540
1	11	4.39	0.0000	POS_OP	≥	16.0000	1.23	1.15%	26	167.78%	46.16%	11.243	3.405
1	12	4.09	0.0000	EY(-9m)	≥	0.1346	1.18	1.11%	23	159.76%	48.51%	9.103	3.074
1	13	3.76	0.0001	PRETAX_PM	≤	-0.0010	0.95	0.89%	20	159.12%	52.39%	7.639	2.833
1	14	3.27	0.0006	CH_DPS(-12m)	≥	-0.5693	0.83	0.78%	15	133.89%	58.19%	4.325	2.116
1	15	3.13	0.0009	MOM_3(-6m)	≥	-0.0962	0.82	0.76%	14	130.29%	58.43%	4.009	2.047
1	16	2.98	0.0015	MOM_6(-6m)	≥	-0.3419	0.80	0.75%	13	126.98%	55.91%	4.104	2.079
1	17	2.82	0.0024	CH_ARISALES	≤	-0.0592	0.60	0.56%	12	125.33%	55.50%	4.006	2.064
1	18	2.66	0.0040	MOM_3(-9m)	≥	-0.2131	0.60	0.56%	11	123.57%	55.50%	3.845	2.032
1	19	2.47	0.0068	DY(-9m)	≥	0.0439	0.60	0.56%	10	123.52%	55.50%	3.795	2.031
1	20	2.27	0.0117	DY(-12m)	≥	0.0413	0.60	0.56%	9	123.21%	55.50%	3.729	2.025
1	21	2.01	0.0220	CH_INVISALES(-9m)	≤	-0.1123	0.57	0.53%	7	122.12%	56.80%	3.455	1.963
1	22	1.75	0.0401	MOM_6(-3m)	≥	-0.0912	0.55	0.51%	6	118.83%	57.60%	3.143	1.880
1	23	1.26	0.1042	CH_TA(-6m)	≤	0.0968	0.48	0.45%	4	121.43%	59.62%	3.028	1.858
1	24	0.91	0.1807	SDEV_VOL(-6m)	≥	-0.9470	0.28	0.26%	3	111.40%	37.56%	6.344	2.684

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**47.63%**	*3584%*	*903*
2	**28.54%**	*930%*	*391*	**70.86%**	*10126%*	*1715*	**76.77%**	*9042%*	*1432*	**91.51%**	*8007%*	*1050*	**61.14%**	*2425%*	*476*
3	**76.94%**	*721%*	*114*	**94.72%**	*4452%*	*564*	**97.90%**	*4887%*	*599*	**140.37%**	*5989%*	*512*	**77.20%**	*2001%*	*311*
4	**121.27%**	*616%*	*61*	**146.21%**	*3521%*	*291*	**152.30%**	*3516%*	*277*	**94.46%**	*937%*	*119*	**78.84%**	*683%*	*104*
5	**121.27%**	*616%*	*61*	**153.90%**	*3463%*	*270*	**184.81%**	*2834%*	*184*	**100.37%**	*945%*	*113*	**78.84%**	*683%*	*104*
6	**121.27%**	*616%*	*61*	**163.08%**	*3071%*	*226*	**192.82%**	*2699%*	*168*	**114.16%**	*809%*	*85*	**76.68%**	*227%*	*36*
7	**119.26%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**122.31%**	*836%*	*82*	**76.68%**	*227%*	*36*
8	**119.26%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**101.26%**	*363%*	*43*	**384.84%**	*96%*	*3*
9	**119.26%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**181.14%**	*151%*	*10*	**0.00%**	*0%*	*0*
10	**119.26%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
11	**144.23%**	*589%*	*49*	**163.60%**	*2125%*	*166*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
12	**144.23%**	*589%*	*49*	**130.77%**	*1449%*	*133*	**191.71%**	*2061%*	*129*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
13	**144.23%**	*589%*	*49*	**111.23%**	*1010%*	*109*	**205.74%**	*2006%*	*117*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
14	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.88%**	*1007%*	*84*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
15	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.03%**	*870%*	*73*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
16	**149.07%**	*559%*	*45*	**105.53%**	*572%*	*65*	**132.70%**	*774%*	*70*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
17	**149.07%**	*559%*	*45*	**107.93%**	*495%*	*55*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
18	**146.43%**	*436%*	*36*	**108.26%**	*469%*	*52*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
19	**146.43%**	*436%*	*36*	**100.32%**	*401%*	*48*	**128.94%**	*645%*	*60*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
20	**146.43%**	*436%*	*36*	**92.46%**	*331%*	*43*	**133.07%**	*588%*	*53*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
21	**146.43%**	*436%*	*36*	**88.53%**	*310%*	*42*	**141.16%**	*353%*	*30*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
22	**146.43%**	*436%*	*36*	**86.52%**	*288%*	*40*	**135.67%**	*226%*	*20*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
23	**146.43%**	*436%*	*36*	**73.56%**	*166%*	*27*	**169.08%**	*127%*	*9*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
24	**146.01%**	*365%*	*30*	**53.72%**	*81%*	*18*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.45	1	2.89	0.0019	MTB	≤	0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.56	2	3.82	0.0001	OPINCITA(-12m)	≥	0.2059	1.48	1.39%	12	89.60%	35.72%	6.115	2.217
0.67	3	3.79	0.0001	SDEV_VOL(-12m)	≥	0.2594	1.18	1.11%	10	106.42%	34.11%	9.304	2.817
0.78	4	3.34	0.0004	POS_OP	≥	16.0000	1.07	1.00%	10	116.99%	50.53%	5.043	2.112
0.89	5	2.87	0.0021	CH_TA(-6m)	≤	0.1497	0.77	0.72%	9	135.62%	31.78%	16.874	3.964
1	6	2.65	0.0040	OPINCITA	≤	0.1633	0.53	0.50%	9	149.76%	35.39%	16.336	3.962
1	7	2.49	0.0065	POS_NET	≥	16.0000	0.53	0.50%	8	148.25%	35.32%	15.844	3.932
1	8	2.31	0.0105	SDEV_VOL	≥	-0.4409	0.52	0.48%	7	148.36%	36.16%	14.915	3.850
1	9	2.11	0.0173	MOM_3(-6m)	≥	-0.2313	0.48	0.45%	6	145.54%	34.39%	15.646	3.975
1	10	1.89	0.0296	MOM_6(-3m)	≥	-0.1964	0.47	0.44%	5	148.77%	33.24%	17.255	4.217
1	11	1.62	0.0528	MOM_3(-9m)	≥	-0.2761	0.45	0.42%	4	149.84%	34.19%	16.324	4.136
1	12	1.28	0.1006	NOSHARES	≤	81392	0.25	0.23%	3	150.44%	34.31%	16.109	4.148
1	13	0.80	0.2114	MOM_6(-6m)	≥	0.3117	0.25	0.23%	2	151.05%	34.31%	16.022	4.165

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**47.63%**	*3584%*	*903*
2	**33.88%**	*212%*	*75*	**76.34%**	*903%*	*142*	**20.67%**	*55%*	*32*	**118.06%**	*1604%*	*163*	**135.00%**	*900%*	*80*
3	**28.50%**	*57%*	*24*	**87.89%**	*637%*	*87*	**18.31%**	*29%*	*19*	**127.36%**	*1167%*	*110*	**153.99%**	*770%*	*60*
4	**49.61%**	*37%*	*9*	**96.12%**	*336%*	*42*	**18.31%**	*29%*	*19*	**127.36%**	*1167%*	*110*	**153.99%**	*770%*	*60*
5	**0.00%**	*0%*	*0*	**93.69%**	*211%*	*27*	**72.85%**	*55%*	*9*	**137.78%**	*769%*	*67*	**164.91%**	*728%*	*53*
6	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**137.78%**	*769%*	*67*	**164.91%**	*728%*	*53*
7	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**135.63%**	*644%*	*57*	**162.36%**	*690%*	*51*
8	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**132.49%**	*497%*	*45*	**162.36%**	*690%*	*51*
9	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**131.24%**	*372%*	*34*	**155.26%**	*647%*	*50*
10	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**141.55%**	*295%*	*25*	**152.61%**	*598%*	*47*
11	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**136.26%**	*204%*	*18*	**155.66%**	*545%*	*42*
12	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**136.66%**	*114%*	*10*	**154.07%**	*488%*	*38*
13	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**144.93%**	*85%*	*7*	**152.53%**	*369%*	*29*

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.5	1	1.39	0.0830	OPINCITA	≤	-0.0455	7.35	6.87%	87	76.31%	57.14%	1.793	1.150
0.6	2	4.03	0.0001	POS_NET	≥	18.0000	4.12	3.85%	68	118.59%	93.35%	1.581	1.157
0.7	3	4.97	0.0000	CH_TA(-9m)	≤	0.3757	3.42	3.19%	65	146.84%	105.32%	1.866	1.291
0.8	4	5.01	0.0000	CH_INVTURN(-6m)	≥	-2.3977	3.10	2.90%	64	163.67%	120.83%	1.737	1.267
0.9	5	5.04	0.0000	MTB	≤	3.6700	2.22	2.07%	42	207.78%	112.12%	3.192	1.762
1	6	5.20	0.0000	PRETAX_PM	≤	-0.0358	1.92	1.79%	42	232.65%	132.31%	2.830	1.683
1	7	5.16	0.0000	CH_DEP	≤	0.5228	1.87	1.74%	40	240.18%	127.15%	3.218	1.810
1	8	5.09	0.0000	CH_ASSTURN(-6m)	≥	-0.2930	1.60	1.50%	37	250.79%	126.38%	3.499	1.904
1	9	4.95	0.0000	CH_ASSTURN	≥	-0.0081	1.37	1.28%	34	259.81%	128.97%	3.554	1.935
1	10	4.87	0.0000	CH_INVITA(-12m)	≥	-0.0248	1.35	1.26%	33	260.55%	125.05%	3.749	2.002
1	11	4.60	0.0000	CH_TA(-12m)	≤	0.2605	1.30	1.21%	30	248.97%	127.25%	3.260	1.877
1	12	4.40	0.0000	NOSHARES	≤	146056	1.27	1.18%	28	235.47%	128.70%	2.812	1.751
1	13	4.02	0.0001	CH_TA	≤	-0.0718	1.02	0.95%	24	230.32%	132.17%	2.516	1.666
1	14	3.56	0.0002	SALESICASH	≥	5.4257	0.77	0.72%	20	203.12%	97.25%	3.565	1.980
1	15	3.07	0.0011	SDEV_VOL	≥	-0.4409	0.58	0.55%	12	214.62%	75.15%	6.574	2.712
1	16	2.94	0.0017	CAPGEAR	≥	0.6557	0.38	0.36%	11	220.11%	93.91%	4.370	2.229
1	17	2.80	0.0026	SDEV_VOL(-12m)	≥	0.2594	0.38	0.36%	10	225.06%	93.91%	4.511	2.281
1	18	2.65	0.0040	EARNG_24(-12m)	≥	-0.1674	0.37	0.34%	9	232.56%	95.43%	4.606	2.323
1	19	2.31	0.0105	EY(-9m)	≥	0.1720	0.37	0.34%	7	233.18%	95.43%	4.573	2.329
1	20	1.89	0.0296	EY(-12m)	≥	0.1754	0.35	0.33%	5	243.36%	96.33%	4.828	2.417
1	21	1.62	0.0528	SDEV_VOL(-6m)	≥	0.3231	0.30	0.28%	4	238.98%	103.61%	3.976	2.207

No	2000			2001			2002			2003			2004		
1	**4.32%**	*128%*	*356*	**42.93%**	*3706%*	*1036*	**142.55%**	*9491%*	*799*	**81.06%**	*4614%*	*683*	**85.51%**	*3121%*	*438*
2	**-18.60%**	*-229%*	*148*	**83.69%**	*4010%*	*575*	**214.84%**	*8271%*	*462*	**98.83%**	*2965%*	*360*	**131.67%**	*2535%*	*231*
3	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**207.25%**	*7668%*	*444*	**98.83%**	*2965%*	*360*	**141.35%**	*2580%*	*219*
4	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**227.61%**	*7568%*	*399*	**126.35%**	*2369%*	*225*	**151.44%**	*2158%*	*171*
5	**54.02%**	*167%*	*37*	**139.32%**	*3634%*	*313*	**368.17%**	*5369%*	*175*	**247.17%**	*1236%*	*60*	**169.71%**	*1230%*	*87*
6	**56.28%**	*169%*	*36*	**155.70%**	*3620%*	*279*	**387.44%**	*5295%*	*164*	**592.10%**	*1086%*	*22*	**169.71%**	*1230%*	*87*
7	**27.54%**	*34%*	*15*	**154.68%**	*3403%*	*264*	**387.44%**	*5295%*	*164*	**592.10%**	*1086%*	*22*	**169.71%**	*1230%*	*87*
8	**27.54%**	*34%*	*15*	**154.68%**	*3403%*	*264*	**387.44%**	*5295%*	*164*	**-41.58%**	*-24%*	*7*	**449.75%**	*1574%*	*42*
9	**27.54%**	*34%*	*15*	**161.11%**	*3222%*	*240*	**399.98%**	*5066%*	*152*	**-41.58%**	*-24%*	*7*	**449.75%**	*1574%*	*42*
10	**27.54%**	*34%*	*15*	**161.17%**	*3156%*	*235*	**405.50%**	*4900%*	*145*	**-41.58%**	*-24%*	*7*	**449.75%**	*1574%*	*42*
11	**27.54%**	*34%*	*15*	**152.09%**	*2788%*	*220*	**396.04%**	*4092%*	*124*	**-41.58%**	*-24%*	*7*	**449.75%**	*1574%*	*42*
12	**27.54%**	*34%*	*15*	**151.21%**	*2583%*	*205*	**351.40%**	*3368%*	*115*	**-41.58%**	*-24%*	*7*	**449.75%**	*1574%*	*42*
13	**27.54%**	*34%*	*15*	**147.84%**	*2008%*	*163*	**314.48%**	*2857%*	*109*	**-41.58%**	*-24%*	*7*	**449.75%**	*1574%*	*42*
14	**27.54%**	*34%*	*15*	**147.84%**	*2008%*	*163*	**314.48%**	*2857%*	*109*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
15	**0.00%**	*0%*	*2*	**113.09%**	*613%*	*65*	**300.24%**	*2202%*	*88*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
16	**0.00%**	*0%*	*0*	**101.19%**	*464%*	*55*	**300.24%**	*2202%*	*88*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
17	**0.00%**	*0%*	*0*	**100.81%**	*420%*	*50*	**308.13%**	*2080%*	*81*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
18	**0.00%**	*0%*	*0*	**102.93%**	*343%*	*40*	**304.82%**	*2007%*	*79*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
19	**0.00%**	*0%*	*0*	**116.02%**	*329%*	*34*	**307.08%**	*1561%*	*61*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
20	**0.00%**	*0%*	*0*	**117.90%**	*324%*	*33*	**349.52%**	*1136%*	*39*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
21	**0.00%**	*0%*	*0*	**117.90%**	*324%*	*33*	**386.97%**	*871%*	*27*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*

Appendix D.10.B Results for dynamic comparison level tests: restricted sample

Continued: Length = ten filters; Initial comparison level = 20 and 25 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.2	1	17.75	0.0000	EY(-9m)	≥ 0.1158	65.07	60.81%	335	45.08%	14.63%	11.095	2.352
0.28	2	16.03	0.0000	CH_ARISALES	≤ 0.0822	47.15	44.07%	245	55.79%	14.88%	15.183	3.039
0.36	3	13.16	0.0000	CH_TA(-12m)	≤ 0.2605	29.97	28.01%	182	64.15%	16.17%	16.084	3.317
0.44	4	11.69	0.0000	EARNG_12	≥ 0.0248	18.40	17.20%	117	78.03%	15.76%	23.882	4.309
0.52	5	10.22	0.0000	CH_EBTISALES(-12m)	≥ -0.7558	15.20	14.21%	111	83.73%	16.18%	25.579	4.552
0.6	6	9.27	0.0000	POS_OP	≥ 8.0000	10.30	9.63%	96	95.82%	19.23%	23.135	4.458
0.68	7	8.42	0.0000	ROA(-12m)	≥ 0.0659	5.33	4.98%	68	107.14%	20.67%	24.432	4.712
0.76	8	7.71	0.0000	CH_TA	≤ 0.3777	4.80	4.49%	66	114.06%	21.14%	26.044	4.928
0.84	9	7.26	0.0000	PRETAX_PM	≤ 0.1034	3.43	3.21%	59	117.95%	28.10%	15.517	3.838
0.92	10	5.93	0.0000	MOM_6(-3m)	≥ -0.0386	3.35	3.13%	58	121.55%	27.94%	16.421	3.992
1	11	4.94	0.0000	ROE	≤ 0.2556	1.43	1.34%	34	151.27%	28.75%	23.580	4.910
1	12	4.85	0.0000	MTB	≤ 2.1700	1.42	1.32%	33	149.46%	28.89%	22.489	4.822
1	13	4.75	0.0000	MOM_6(-6m)	≥ 0.0666	1.42	1.32%	31	150.99%	29.29%	22.038	4.811
1	14	4.66	0.0000	MOM_3(-6m)	≥ -0.0962	1.42	1.32%	30	149.65%	29.48%	21.082	4.735
1	15	4.56	0.0000	MOM_3(-9m)	≥ -0.1501	1.42	1.32%	29	149.46%	29.54%	20.669	4.719
1	16	4.36	0.0000	EARNG_24(-9m)	≥ -0.0858	1.42	1.32%	27	143.54%	29.18%	19.285	4.571
1	17	4.25	0.0000	EARNG_24(-12m)	≥ -0.0871	1.42	1.32%	26	138.54%	29.10%	18.091	4.444
1	18	4.03	0.0001	NOSHARES	≤ 146056	1.13	1.06%	24	135.15%	29.53%	16.269	4.226
1	19	3.98	0.0001	DY(-12m)	≥ 0.0474	1.12	1.04%	23	135.99%	29.62%	16.173	4.241
1	20	3.88	0.0001	DY(-9m)	≥ 0.0439	1.12	1.04%	22	136.60%	29.81%	15.911	4.234
1	21	3.75	0.0001	CH_SALES(-9m)	≥ 0.0716	0.95	0.89%	18	149.80%	32.76%	15.645	4.278
1	22	3.64	0.0002	ROA	≤ 0.1197	0.75	0.70%	17	150.89%	33.42%	15.065	4.225
1	23	3.21	0.0007	CH_INVISALES(-9m)	≤ 0.0949	0.67	0.62%	13	153.40%	35.98%	13.273	3.986
1	24	2.94	0.0017	CH_ASSTURN(-6m)	≥ -0.0316	0.60	0.56%	11	152.01%	38.15%	11.459	3.721
1	25	2.78	0.0027	POS_ROE	≥ 19.0000	0.57	0.53%	10	152.37%	39.36%	10.688	3.618
1	26	2.49	0.0065	SALESICASH	≥ -28.0377	0.33	0.31%	8	163.09%	47.18%	8.423	3.263
1	27	2.11	0.0173	POS_OP(-12m)	≤ 28.0000	0.30	0.28%	6	145.45%	47.93%	6.418	2.838
1	28	1.89	0.0296	CH_INVTURN(-6m)	≥ -1.2918	0.28	0.26%	5	137.81%	49.37%	5.371	2.598
1	29	1.62	0.0528	EY(-12m)	≥ 0.1493	0.27	0.25%	4	130.94%	50.87%	4.516	2.382
1	30	0.80	0.2114	SDEV_VOL(-6m)	≥ -0.9470	0.23	0.22%	2	119.26%	54.48%	3.231	2.002

No	2000			2001			2002			2003			2004		
1	**1.63%**	*374%*	*2763*	**42.20%**	*21509%*	*6116*	**42.28%**	*25958%*	*7368*	**59.03%**	*38475%*	*7821*	**55.44%**	*21916%*	*4744*
2	**14.02%**	*1547%*	*1324*	**49.67%**	*13468%*	*3254*	**53.10%**	*19374%*	*4378*	**70.09%**	*29986%*	*5134*	**59.69%**	*17421%*	*3502*
3	**14.04%**	*655%*	*560*	**54.19%**	*7753%*	*1717*	**62.20%**	*14223%*	*2744*	**79.06%**	*22873%*	*3472*	**63.64%**	*13061%*	*2463*
4	**12.77%**	*216%*	*203*	**71.63%**	*4136%*	*693*	**79.92%**	*6440%*	*967*	**90.45%**	*15557%*	*2064*	**72.81%**	*11340%*	*1869*
5	**11.94%**	*201%*	*202*	**72.10%**	*4098%*	*682*	**79.69%**	*5465%*	*823*	**96.76%**	*13593%*	*1686*	**86.24%**	*10974%*	*1527*
6	**14.36%**	*124%*	*104*	**71.44%**	*2149%*	*361*	**88.50%**	*3820%*	*518*	**107.63%**	*11400%*	*1271*	**101.54%**	*8952%*	*1058*
7	**0.00%**	*0%*	*0*	**73.27%**	*568%*	*93*	**102.48%**	*1751%*	*205*	**116.48%**	*7659%*	*789*	**102.83%**	*6521%*	*761*
8	**0.00%**	*0%*	*0*	**73.27%**	*568%*	*93*	**102.48%**	*1751%*	*205*	**119.02%**	*6735%*	*679*	**118.58%**	*6117%*	*619*
9	**0.00%**	*0%*	*0*	**36.26%**	*62%*	*21*	**115.12%**	*1621%*	*169*	**119.03%**	*6229%*	*628*	**121.35%**	*4591%*	*454*
10	**0.00%**	*0%*	*0*	**36.26%**	*62%*	*21*	**120.75%**	*1399%*	*139*	**124.22%**	*5901%*	*570*	**122.47%**	*4429%*	*434*
11	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.47%**	*303%*	*27*	**139.01%**	*3290%*	*284*	**173.00%**	*2609%*	*181*
12	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.47%**	*303%*	*27*	**139.01%**	*3290%*	*284*	**169.41%**	*2386%*	*169*
13	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**139.64%**	*267%*	*23*	**142.12%**	*3115%*	*263*	**167.42%**	*2204%*	*158*
14	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**139.64%**	*267%*	*23*	**140.62%**	*2965%*	*253*	**165.78%**	*2156%*	*156*
15	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**139.64%**	*267%*	*23*	**138.43%**	*2815%*	*244*	**168.53%**	*2149%*	*153*
16	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**139.64%**	*267%*	*23*	**135.45%**	*2675%*	*237*	**158.33%**	*1794%*	*136*
17	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**139.64%**	*267%*	*23*	**133.16%**	*2574%*	*232*	**151.00%**	*1623%*	*129*
18	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**139.64%**	*267%*	*23*	**131.43%**	*2464%*	*225*	**141.73%**	*1323%*	*112*
19	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**139.64%**	*267%*	*23*	**130.08%**	*2363%*	*218*	**147.28%**	*1313%*	*107*
20	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**139.64%**	*267%*	*23*	**129.21%**	*2250%*	*209*	**150.81%**	*1307%*	*104*
21	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**147.21%**	*1632%*	*133*	**151.52%**	*1275%*	*101*
22	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**147.33%**	*1535%*	*125*	**153.76%**	*1243%*	*97*
23	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**136.41%**	*1250%*	*110*	**180.26%**	*961%*	*64*
24	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**126.22%**	*991%*	*95*	**195.39%**	*896%*	*55*
25	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**123.44%**	*864%*	*84*	**194.48%**	*875%*	*54*
26	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**131.69%**	*593%*	*54*	**194.48%**	*875%*	*54*
27	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**124.19%**	*507%*	*49*	**176.22%**	*511%*	*35*
28	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**117.46%**	*440%*	*45*	**171.74%**	*386%*	*27*
29	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**110.86%**	*370%*	*40*	**171.08%**	*285%*	*20*
30	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**105.92%**	*238%*	*27*	**159.30%**	*119%*	*9*

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.25	1	13.64	0.0000	EY(-12m)	≥ 0.1493	49.70	46.45%	288	49.85%	16.09%	10.666	2.433
0.325	2	14.09	0.0000	CH_ARISALES	≤ 0.0922	35.80	33.27%	216	62.45%	16.65%	14.717	3.109
0.4	3	12.37	0.0000	CH_ASSTURN(-12m)	≥ -0.1046	25.73	24.05%	175	68.28%	18.59%	13.624	3.098
0.475	4	11.32	0.0000	EARNG_12	≥ 0.0315	16.00	14.95%	96	81.17%	19.17%	17.326	3.696
0.55	5	9.80	0.0000	OPINCITA(-12m)	≥ 0.0483	13.37	12.49%	91	86.02%	20.18%	17.233	3.757
0.625	6	8.42	0.0000	POS_OP	≥ 8.0000	8.55	7.99%	76	96.93%	22.48%	17.220	3.861
0.7	7	7.62	0.0000	ROA(-12m)	≥ 0.0659	4.33	4.05%	52	104.82%	30.57%	10.650	3.101
0.775	8	7.23	0.0000	CH_DEP	≤ 0.3852	3.63	3.40%	50	111.23%	27.83%	14.250	3.633
0.85	9	6.27	0.0000	MOM_6(-3m)	≥ -0.0386	3.55	3.32%	49	114.32%	27.84%	15.041	3.774
0.925	10	4.85	0.0000	PRETAX_PM	≤ 0.1034	3.33	3.12%	49	115.80%	27.70%	15.145	3.818
1	11	4.09	0.0000	ROE	≤ 0.2556	1.27	1.18%	25	138.96%	31.35%	16.733	4.095
1	12	4.09	0.0000	MOM_6(-6m)	≥ 0.0666	1.27	1.18%	24	141.37%	31.49%	16.926	4.156
1	13	4.02	0.0001	MOM_3(-6m)	≥ 0.0388	1.27	1.18%	22	141.48%	31.84%	16.352	4.117
1	14	3.91	0.0001	MOM_3(-9m)	≥ -0.1501	1.27	1.18%	21	140.91%	31.84%	16.005	4.099
1	15	3.67	0.0001	EARNG_24(-9m)	≥ -0.0858	1.23	1.15%	19	132.06%	30.26%	15.361	4.015
1	16	3.54	0.0002	EY(-9m)	≥ 0.1346	1.23	1.15%	18	131.69%	30.17%	15.174	4.014
1	17	3.41	0.0004	EARNG_24(-12m)	≥ -0.0871	1.22	1.14%	17	125.33%	29.44%	14.245	3.893
1	18	3.27	0.0006	NOSHARES	≤ 146056	1.02	0.95%	16	123.30%	29.93%	13.174	3.759
1	19	3.12	0.0009	DY(-9m)	≥ 0.0439	1.02	0.95%	15	123.52%	30.13%	12.888	3.741
1	20	2.96	0.0016	DY(-12m)	≥ 0.0536	0.98	0.92%	14	123.22%	30.34%	12.487	3.703
1	21	2.87	0.0020	POS_NET	≥ 20.0000	0.97	0.90%	13	124.20%	30.58%	12.336	3.705
1	22	2.87	0.0021	MTB	≤ 1.6700	0.97	0.90%	12	126.80%	31.22%	12.189	3.717
1	23	2.71	0.0034	ROA	≤ 0.1197	0.65	0.61%	10	132.21%	34.02%	11.025	3.587
1	24	2.34	0.0096	CH_DPS(-12m)	≥ 0.0195	0.62	0.58%	8	129.54%	34.91%	9.937	3.422
1	25	2.31	0.0105	SDEV_VOL(-6m)	≥ -0.9470	0.50	0.47%	7	133.69%	37.60%	9.015	3.304
1	26	2.11	0.0173	SDEV_VOL(-9m)	≥ -1.4083	0.48	0.45%	6	128.21%	38.30%	7.900	3.102
1	27	1.28	0.1006	CH_INVISALES(-9m)	≤ 0.0949	0.43	0.40%	3	127.64%	45.59%	5.462	2.581
1	28	0.80	0.2114	SALESICASH	≥ -28.0377	0.23	0.22%	2	119.26%	54.48%	3.303	2.002

No	2000			2001			2002			2003			2004		
1	**0.38%**	*73%*	*2293*	**46.27%**	*17300%*	*4487*	**49.72%**	*20267%*	*4891*	**67.21%**	*29417%*	*5252*	**63.17%**	*15398%*	*2925*
2	**15.04%**	*1446%*	*1154*	**54.72%**	*11746%*	*2576*	**62.82%**	*16071%*	*3070*	**80.14%**	*23369%*	*3499*	**67.92%**	*11937%*	*2109*
3	**10.32%**	*509%*	*592*	**59.66%**	*7661%*	*1541*	**68.71%**	*12310%*	*2150*	**83.34%**	*21113%*	*3040*	**68.81%**	*9616%*	*1677*
4	**8.00%**	*147%*	*220*	**68.24%**	*3258%*	*573*	**82.79%**	*5312%*	*770*	**94.03%**	*12858%*	*1641*	**82.15%**	*8215%*	*1200*
5	**8.00%**	*147%*	*220*	**68.66%**	*3154%*	*552*	**83.23%**	*4002%*	*577*	**101.27%**	*11451%*	*1358*	**93.37%**	*8162%*	*1049*
6	**6.39%**	*69%*	*130*	**64.01%**	*1840%*	*345*	**100.17%**	*2554%*	*306*	**115.48%**	*9248%*	*961*	**102.94%**	*6159%*	*718*
7	**-38.81%**	*-52%*	*16*	**42.31%**	*148%*	*42*	**108.11%**	*1568%*	*174*	**121.21%**	*6151%*	*609*	**92.76%**	*3610%*	*467*
8	**0.00%**	*0%*	*0*	**36.26%**	*62%*	*21*	**112.33%**	*1526%*	*163*	**119.13%**	*5500%*	*554*	**103.87%**	*3480%*	*402*
9	**0.00%**	*0%*	*0*	**36.26%**	*62%*	*21*	**117.60%**	*1303%*	*133*	**124.21%**	*5217%*	*504*	**104.67%**	*3364%*	*386*
10	**0.00%**	*0%*	*0*	**36.26%**	*62%*	*21*	**117.60%**	*1303%*	*133*	**124.71%**	*5165%*	*497*	**107.74%**	*3313%*	*369*
11	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.47%**	*303%*	*27*	**135.21%**	*2941%*	*261*	**150.43%**	*1203%*	*96*
12	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**139.64%**	*267%*	*23*	**137.93%**	*2770%*	*241*	**150.43%**	*1203%*	*96*
13	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**147.14%**	*245%*	*20*	**138.82%**	*2441%*	*211*	**146.31%**	*1134%*	*93*
14	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**147.14%**	*245%*	*20*	**136.09%**	*2291%*	*202*	**150.33%**	*1127%*	*90*
15	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**147.14%**	*245%*	*20*	**132.38%**	*2151%*	*195*	**127.08%**	*773%*	*73*
16	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**147.14%**	*245%*	*20*	**133.19%**	*2087%*	*188*	**123.02%**	*697%*	*68*
17	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**147.14%**	*245%*	*20*	**130.23%**	*1986%*	*183*	**103.48%**	*526%*	*61*
18	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**147.14%**	*245%*	*20*	**128.66%**	*1896%*	*177*	**97.73%**	*448%*	*55*
19	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**147.14%**	*245%*	*20*	**127.40%**	*1784%*	*168*	**101.93%**	*442%*	*52*
20	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**147.14%**	*245%*	*20*	**126.50%**	*1687%*	*160*	**102.34%**	*409%*	*48*
21	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**147.14%**	*245%*	*20*	**127.67%**	*1595%*	*150*	**103.23%**	*396%*	*46*
22	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**154.88%**	*245%*	*19*	**131.13%**	*1388%*	*127*	**103.23%**	*396%*	*46*
23	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**144.49%**	*1120%*	*93*	**100.70%**	*378%*	*45*
24	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**170.64%**	*71%*	*5*	**147.86%**	*936%*	*76*	**88.58%**	*288%*	*39*
25	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**164.56%**	*782%*	*57*	**88.58%**	*288%*	*39*
26	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**158.16%**	*646%*	*49*	**86.27%**	*252%*	*35*
27	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**127.60%**	*362%*	*34*	**127.75%**	*149%*	*14*
28	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**105.92%**	*238%*	*27*	**159.30%**	*119%*	*9*

Appendix D.10.B Results for dynamic comparison level tests: restricted sample

Continued: Length = ten filters; Initial comparison level = 30 and 35 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.3	1	10.40	0.0000	EY(-12m)	≥	0.1493	49.70	46.45%	288	49.85%	16.09%	10.666	2.433
0.37	2	11.89	0.0000	CH_ARISALES	≤	0.0922	35.80	33.27%	216	62.45%	16.65%	14.717	3.109
0.44	3	10.68	0.0000	CH_ASSTURN(-12m)	≥	-0.1046	25.73	24.05%	175	68.28%	18.59%	13.624	3.098
0.51	4	10.18	0.0000	EARNG_12	≥	0.0315	16.00	14.95%	96	81.17%	19.17%	17.326	3.696
0.58	5	9.11	0.0000	CH_EBTISALES(-12m)	≥	-0.3246	10.73	10.03%	86	93.23%	25.14%	12.970	3.308
0.65	6	8.29	0.0000	CH_DEP	≤	0.3852	8.40	7.85%	77	99.86%	23.59%	16.602	3.810
0.72	7	8.08	0.0000	POS_OP	≥	8.0000	5.40	5.05%	69	116.51%	27.35%	16.474	3.895
0.79	8	7.48	0.0000	PRETAX_PM	≤	0.1034	4.77	4.45%	69	119.15%	27.42%	16.891	3.979
0.86	9	6.70	0.0000	MOM_6(-3m)	≥	0.0666	4.38	4.10%	63	124.19%	27.71%	17.683	4.121
0.93	10	5.55	0.0000	CH_ASSTURN(-6m)	≥	-0.0970	4.03	3.77%	61	127.69%	27.80%	18.292	4.231
1	11	4.87	0.0000	CH_QUICK	≤	0.0110	2.18	2.04%	38	146.18%	30.30%	19.842	4.484
1	12	5.03	0.0000	ROE	≤	0.3420	1.82	1.70%	34	156.56%	32.57%	19.421	4.492
1	13	4.95	0.0000	MTB	≤	2.1700	1.80	1.68%	33	154.28%	34.65%	16.439	4.155
1	14	4.86	0.0000	CH_TA	≤	0.1530	1.60	1.50%	32	153.07%	29.60%	21.886	4.821
1	15	4.77	0.0000	MOM_3(-9m)	≥	-0.1501	1.60	1.50%	31	152.98%	29.58%	21.596	4.820
1	16	4.59	0.0000	MOM_3(-6m)	≥	-0.0962	1.60	1.50%	29	152.58%	29.96%	20.670	4.747
1	17	4.40	0.0000	EARNG_24(-9m)	≥	-0.0858	1.57	1.46%	27	146.85%	28.80%	20.452	4.735
1	18	4.29	0.0000	EY(-9m)	≥	0.1346	1.57	1.46%	26	147.05%	28.73%	20.348	4.752
1	19	4.07	0.0000	NOSHARES	≤	146056	1.35	1.26%	24	142.20%	28.35%	19.305	4.642
1	20	3.98	0.0001	DY(-9m)	≥	0.0439	1.35	1.26%	23	143.00%	28.48%	19.100	4.647
1	21	3.86	0.0001	CH_SALES(-9m)	≥	0.0716	1.18	1.11%	19	161.67%	28.49%	24.099	5.328
1	22	3.76	0.0001	ROA	≤	0.1197	0.98	0.92%	18	163.37%	28.92%	23.586	5.306
1	23	3.66	0.0002	CH_DPS(-12m)	≥	-0.5693	0.98	0.92%	17	162.60%	28.98%	23.001	5.271
1	24	3.55	0.0002	POS_NET	≥	14.0000	0.95	0.89%	16	164.14%	30.45%	20.976	5.069
1	25	3.44	0.0003	EARNG_24(-12m)	≥	-0.1674	0.93	0.87%	15	159.80%	30.92%	19.063	4.853
1	26	3.32	0.0005	MOM_6(-6m)	≥	0.0666	0.87	0.81%	14	156.89%	31.42%	17.587	4.679
1	27	3.07	0.0011	CH_TA(-6m)	≤	0.1497	0.83	0.78%	12	145.04%	32.57%	13.832	4.149
1	28	2.94	0.0017	CH_INVTA	≥	0.0083	0.63	0.59%	11	137.14%	33.70%	11.419	3.772
1	29	2.49	0.0065	CH_INVISALES(-9m)	≤	0.0949	0.58	0.55%	8	139.87%	34.63%	11.121	3.736
1	30	2.11	0.0173	CH_INVTURN(-6m)	≥	-0.7389	0.52	0.48%	8	133.42%	37.30%	8.629	3.289
1	31	1.89	0.0296	POS_ROE	≥	19.0000	0.48	0.45%	5	131.05%	39.21%	7.452	3.070
1	32	1.28	0.1006	SALESTCASH	≥	-28.0377	0.27	0.25%	3	128.54%	50.87%	4.213	2.333
1	33	0.80	0.2114	SDEV_VOL(-6m)	≥	-0.9470	0.23	0.22%	2	119.26%	54.48%	3.129	2.002

No	2000			2001			2002			2003			2004		
1	**0.38%**	*73%*	*2293*	**46.27%**	*17300%*	*4487*	**49.72%**	*20267%*	*4891*	**67.21%**	*29417%*	*5252*	**63.17%**	*15398%*	*2925*
2	**15.04%**	*1446%*	*1154*	**64.72%**	*11746%*	*2576*	**62.82%**	*16071%*	*3070*	**80.14%**	*23369%*	*3499*	**67.92%**	*11937%*	*2109*
3	**10.32%**	*509%*	*592*	**59.66%**	*7661%*	*1541*	**68.71%**	*12310%*	*2150*	**83.34%**	*21113%*	*3040*	**68.81%**	*9616%*	*1677*
4	**8.00%**	*147%*	*220*	**68.24%**	*3258%*	*573*	**82.79%**	*5312%*	*770*	**94.03%**	*12858%*	*1641*	**82.16%**	*8215%*	*1200*
5	**-1.93%**	*-17%*	*106*	**72.66%**	*1144%*	*189*	**89.65%**	*3123%*	*418*	**106.33%**	*10979%*	*1239*	**92.48%**	*7707%*	*1000*
6	**13.32%**	*50%*	*45*	**73.27%**	*934%*	*153*	**102.76%**	*2997%*	*350*	**106.52%**	*9090%*	*1024*	**100.01%**	*7301%*	*876*
7	**0.00%**	*0%*	*0*	**35.25%**	*62%*	*21*	**119.77%**	*1837%*	*184*	**123.16%**	*8201%*	*799*	**109.68%**	*5630%*	*616*
8	**0.00%**	*0%*	*0*	**35.25%**	*62%*	*21*	**119.77%**	*1837%*	*184*	**124.40%**	*8096%*	*781*	**114.86%**	*5494%*	*574*
9	**0.00%**	*0%*	*0*	**35.25%**	*62%*	*21*	**123.02%**	*1240%*	*121*	**131.12%**	*6884%*	*630*	**118.97%**	*4481%*	*452*
10	**0.00%**	*0%*	*0*	**35.25%**	*62%*	*21*	**123.02%**	*1240%*	*121*	**134.28%**	*6300%*	*563*	**124.68%**	*4145%*	*399*
11	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**126.84%**	*285%*	*27*	**128.86%**	*4231%*	*394*	**187.23%**	*2793%*	*179*
12	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.61%**	*269%*	*24*	**135.39%**	*3452%*	*306*	**203.24%**	*2541%*	*150*
13	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.61%**	*269%*	*24*	**135.85%**	*3453%*	*305*	**198.13%**	*2295%*	*139*
14	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.61%**	*269%*	*24*	**135.85%**	*3453%*	*305*	**197.92%**	*2095%*	*127*
15	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.61%**	*269%*	*24*	**133.90%**	*3303%*	*296*	**202.09%**	*2088%*	*124*
16	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.61%**	*269%*	*24*	**132.78%**	*3032%*	*274*	**200.57%**	*2039%*	*122*
17	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.61%**	*269%*	*24*	**129.99%**	*2892%*	*267*	**192.63%**	*1685%*	*105*
18	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.61%**	*269%*	*24*	**130.51%**	*2828%*	*260*	**193.05%**	*1609%*	*100*
19	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.61%**	*269%*	*24*	**127.10%**	*2637%*	*249*	**187.52%**	*1360%*	*87*
20	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.61%**	*269%*	*24*	**126.23%**	*2525%*	*240*	**193.33%**	*1353%*	*84*
21	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**142.76%**	*1856%*	*156*	**195.79%**	*1322%*	*81*
22	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**142.62%**	*1759%*	*148*	**200.92%**	*1289%*	*77*
23	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**145.71%**	*1676%*	*138*	**191.24%**	*1195%*	*75*
24	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**148.80%**	*1575%*	*127*	**188.08%**	*1160%*	*74*
25	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**151.42%**	*1489%*	*118*	**171.03%**	*1012%*	*71*
26	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**152.65%**	*1476%*	*116*	**161.67%**	*822%*	*61*
27	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**152.64%**	*1285%*	*101*	**125.75%**	*545%*	*52*
28	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**150.55%**	*1192%*	*95*	**103.83%**	*398%*	*46*
29	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**136.14%**	*908%*	*80*	**141.81%**	*295%*	*25*
30	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**119.73%**	*649%*	*65*	**172.20%**	*230%*	*16*
31	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**223.40%**	*56%*	*3*	**115.84%**	*521%*	*54*	**167.36%**	*209%*	*15*
32	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**110.90%**	*305%*	*33*	**167.36%**	*209%*	*15*
33	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**106.92%**	*238%*	*27*	**159.30%**	*119%*	*9*

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.35	1	7.70	0.0000	MTB	≤	0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.415	2	8.71	0.0000	CH_TA(-12m)	≤	0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.48	3	7.83	0.0000	DY	≤	0.0277	7.90	7.38%	75	103.14%	42.27%	5.756	2.188
0.545	4	7.74	0.0000	ROA(-12m)	≥	-0.1173	6.83	6.39%	67	102.92%	29.13%	11.869	3.162
0.61	5	7.96	0.0000	POS_NET	≥	16.0000	4.32	4.03%	56	120.52%	33.63%	11.974	3.259
0.675	6	7.63	0.0000	ROE(-12m)	≥	-0.1618	3.80	3.55%	55	125.10%	35.96%	11.116	3.178
0.74	7	7.03	0.0000	CH_TA(-6m)	≤	0.2556	3.72	3.47%	55	125.74%	35.74%	11.204	3.216
0.805	8	6.27	0.0000	ROE(-9m)	≥	-0.0748	3.45	3.22%	53	129.47%	38.44%	10.111	3.085
0.87	9	5.58	0.0000	ROA	≤	0.0122	2.50	2.34%	38	148.19%	43.07%	10.377	3.196
0.935	10	5.39	0.0000	CH_DEP	≤	0.3852	1.85	1.73%	37	157.22%	44.64%	10.719	3.289
1	11	4.99	0.0000	EY(-12m)	≥	-0.0335	1.75	1.64%	34	166.15%	41.24%	13.827	3.772
1	12	4.92	0.0000	OPINCITA	≤	0.0798	1.52	1.42%	32	171.59%	42.56%	13.658	3.784
1	13	4.67	0.0000	NOSHARES	≤	49060	1.28	1.20%	29	174.60%	46.34%	11.767	3.540
1	14	4.39	0.0000	POS_OP	≥	16.0000	1.23	1.15%	26	167.78%	46.16%	10.800	3.405
1	15	4.09	0.0000	EY(-9m)	≥	0.1346	1.18	1.11%	23	159.76%	48.51%	8.749	3.074
1	16	3.76	0.0001	PRETAX_PM	≤	-0.0010	0.95	0.89%	20	159.12%	52.39%	7.345	2.833
1	17	3.27	0.0006	CH_DPS(-12m)	≥	-0.5693	0.83	0.78%	15	133.89%	58.19%	4.161	2.116
1	18	3.13	0.0009	MOM_3(-6m)	≥	-0.0962	0.82	0.76%	14	130.29%	58.43%	3.859	2.047
1	19	2.98	0.0015	MOM_6(-6m)	≥	-0.3419	0.80	0.75%	13	126.98%	55.91%	3.952	2.079
1	20	2.82	0.0024	CH_ARISALES	≤	-0.0592	0.60	0.56%	12	125.33%	55.50%	3.860	2.064
1	21	2.66	0.0040	MOM_3(-9m)	≥	-0.2131	0.60	0.56%	11	123.57%	55.50%	3.706	2.032
1	22	2.47	0.0068	DY(-9m)	≥	0.0439	0.60	0.56%	10	123.52%	55.50%	3.659	2.031
1	23	2.27	0.0117	DY(-12m)	≥	0.0413	0.60	0.56%	9	123.21%	55.50%	3.598	2.025
1	24	2.01	0.0220	CH_INVISALES(-9m)	≤	-0.1123	0.57	0.53%	7	122.12%	56.80%	3.335	1.963
1	25	1.75	0.0401	MOM_6(-3m)	≥	-0.0912	0.55	0.51%	6	118.83%	57.60%	3.035	1.880
1	26	1.05	0.1473	SDEV_VOL(-12m)	≥	-1.2656	0.48	0.45%	4	108.57%	58.62%	2.418	1.673
1	27	0.91	0.1807	SDEV_VOL(-6m)	≥	-0.9470	0.28	0.26%	3	111.40%	37.56%	6.130	2.684

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**47.63%**	*3584%*	*903*
2	**28.54%**	*930%*	*391*	**70.85%**	*10126%*	*1715*	**75.77%**	*9042%*	*1432*	**91.51%**	*8007%*	*1050*	**61.14%**	*2425%*	*476*
3	**76.94%**	*721%*	*114*	**94.72%**	*4452%*	*564*	**97.90%**	*4887%*	*599*	**140.37%**	*5989%*	*512*	**77.20%**	*2001%*	*311*
4	**79.42%**	*721%*	*109*	**110.38%**	*4489%*	*488*	**100.63%**	*4621%*	*551*	**129.85%**	*4967%*	*459*	**43.55%**	*744%*	*205*
5	**112.06%**	*654%*	*70*	**136.76%**	*3530%*	*312*	**127.97%**	*3978%*	*373*	**113.99%**	*3163%*	*333*	**82.04%**	*848%*	*124*
6	**112.06%**	*654%*	*70*	**143.15%**	*3471%*	*291*	**135.48%**	*3398%*	*301*	**118.42%**	*3138%*	*318*	**82.04%**	*848%*	*124*
7	**112.06%**	*654%*	*70*	**148.41%**	*3463%*	*280*	**133.61%**	*3340%*	*300*	**118.42%**	*3138%*	*318*	**82.04%**	*848%*	*124*
8	**109.46%**	*584%*	*64*	**168.43%**	*3046%*	*217*	**132.47%**	*3279%*	*297*	**121.93%**	*3119%*	*307*	**82.70%**	*848%*	*123*
9	**109.46%**	*584%*	*64*	**168.43%**	*3046%*	*217*	**163.90%**	*2336%*	*171*	**142.10%**	*1255%*	*106*	**54.10%**	*189%*	*42*
10	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**139.26%**	*1195%*	*103*	**54.10%**	*189%*	*42*
11	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**135.44%**	*722%*	*64*	**78.04%**	*59%*	*9*
12	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**197.61%**	*511%*	*31*	**-75.35%**	*-38%*	*6*
13	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
14	**144.23%**	*589%*	*49*	**153.60%**	*2125%*	*166*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
15	**144.23%**	*589%*	*49*	**130.77%**	*1449%*	*133*	**191.71%**	*2061%*	*129*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
16	**144.23%**	*589%*	*49*	**111.23%**	*1010%*	*109*	**205.74%**	*2006%*	*117*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
17	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.88%**	*1007%*	*84*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
18	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.03%**	*870%*	*73*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
19	**149.07%**	*559%*	*45*	**105.53%**	*572%*	*65*	**132.70%**	*774%*	*70*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
20	**149.07%**	*559%*	*45*	**107.93%**	*495%*	*55*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
21	**145.43%**	*436%*	*36*	**108.26%**	*469%*	*52*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
22	**145.43%**	*436%*	*36*	**100.32%**	*401%*	*48*	**128.94%**	*645%*	*60*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
23	**145.43%**	*436%*	*36*	**92.46%**	*331%*	*43*	**133.07%**	*588%*	*53*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
24	**145.43%**	*436%*	*36*	**88.63%**	*310%*	*42*	**141.16%**	*353%*	*30*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
25	**145.43%**	*436%*	*36*	**86.52%**	*288%*	*40*	**135.57%**	*226%*	*20*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
26	**145.43%**	*436%*	*36*	**65.59%**	*169%*	*31*	**109.63%**	*46%*	*5*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
27	**146.01%**	*365%*	*30*	**53.72%**	*81%*	*18*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*

Appendix D.10.B Results for dynamic comparison level tests: restricted sample

Continued: Length = ten filters; Initial comparison level = 40 and 45 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.4	1	5.33	0.0000	MTB	≤	0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.46	2	7.09	0.0000	CH_TA(-12m)	≤	0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.52	3	7.29	0.0000	DY	≤	0.0277	7.90	7.38%	75	103.14%	42.27%	5.756	2.188
0.58	4	7.31	0.0000	ROA(-12m)	≥	-0.0440	5.40	5.05%	66	110.18%	33.49%	10.269	2.969
0.64	5	7.85	0.0000	POS_NET	≥	16.0000	3.43	3.21%	55	126.90%	36.53%	11.244	3.178
0.7	6	7.57	0.0000	CH_TA(-6m)	≤	0.2556	3.35	3.13%	55	127.58%	36.32%	11.331	3.216
0.76	7	6.97	0.0000	OPINCITA	≤	0.1216	2.97	2.77%	49	131.48%	37.27%	11.249	3.241
0.82	8	6.26	0.0000	CH_TA	≤	0.2654	2.75	2.57%	49	132.80%	37.62%	11.100	3.246
0.88	9	5.57	0.0000	CH_INVTURN(-12m)	≥	-2.3977	1.72	1.60%	38	155.54%	48.20%	9.125	3.008
0.94	10	5.39	0.0000	ROE(-9m)	≥	-0.0748	1.67	1.56%	37	160.40%	49.37%	9.122	3.035
1	11	4.99	0.0000	EY(-12m)	≥	-0.0335	1.57	1.46%	34	169.84%	47.66%	10.819	3.338
1	12	4.92	0.0000	NOSHARES	≤	49060	1.33	1.25%	32	175.60%	47.84%	11.320	3.446
1	13	4.67	0.0000	ROE	≤	-0.0036	1.28	1.20%	29	174.60%	46.34%	11.767	3.540
1	14	4.39	0.0000	POS_OP	≥	16.0000	1.23	1.15%	26	167.78%	46.16%	10.800	3.405
1	15	4.09	0.0000	EY(-9m)	≥	0.1346	1.18	1.11%	23	159.76%	48.51%	8.749	3.074
1	16	3.76	0.0001	PRETAX_PM	≤	-0.0010	0.95	0.89%	20	159.12%	52.39%	7.345	2.833
1	17	3.27	0.0006	CH_DPS(-12m)	≥	-0.5693	0.83	0.78%	15	133.89%	58.19%	4.161	2.116
1	18	3.13	0.0009	MOM_3(-6m)	≥	-0.0962	0.82	0.76%	14	130.29%	58.43%	3.859	2.047
1	19	2.98	0.0015	MOM_6(-6m)	≥	-0.3419	0.80	0.75%	13	126.98%	55.91%	3.952	2.079
1	20	2.82	0.0024	CH_ARISALES	≤	-0.0592	0.60	0.56%	12	125.33%	55.50%	3.860	2.064
1	21	2.66	0.0040	MOM_3(-9m)	≥	-0.2131	0.60	0.56%	11	123.57%	55.50%	3.706	2.032
1	22	2.47	0.0068	DY(-9m)	≥	0.0439	0.60	0.56%	10	123.52%	55.50%	3.659	2.031
1	23	2.27	0.0117	DY(-12m)	≥	0.0413	0.60	0.56%	9	123.21%	55.50%	3.598	2.025
1	24	2.01	0.0220	CH_INVISALES(-9m)	≤	-0.1123	0.57	0.53%	7	122.12%	56.80%	3.335	1.963
1	25	1.75	0.0401	MOM_6(-3m)	≥	-0.0912	0.55	0.51%	6	118.83%	57.60%	3.035	1.880
1	26	1.05	0.1473	SDEV_VOL(-12m)	≥	-1.2656	0.48	0.45%	4	108.57%	58.62%	2.418	1.673
1	27	0.91	0.1807	SDEV_VOL(-6m)	≥	-0.9470	0.28	0.26%	3	111.40%	37.56%	6.130	2.684

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**47.63%**	*3584%*	*903*
2	**28.54%**	*930%*	*391*	**70.85%**	*10126%*	*1715*	**75.77%**	*9042%*	*1432*	**91.51%**	*8007%*	*1050*	**61.14%**	*2425%*	*476*
3	**75.94%**	*721%*	*114*	**94.72%**	*4452%*	*564*	**97.90%**	*4887%*	*599*	**140.37%**	*5989%*	*512*	**77.20%**	*2001%*	*311*
4	**88.87%**	*630%*	*85*	**123.18%**	*4178%*	*407*	**106.28%**	*3791%*	*428*	**137.87%**	*4871%*	*424*	**43.77%**	*744%*	*204*
5	**112.06%**	*654%*	*70*	**143.16%**	*3471%*	*291*	**139.27%**	*3389%*	*292*	**120.77%**	*3059%*	*304*	**82.70%**	*848%*	*123*
6	**112.06%**	*654%*	*70*	**148.41%**	*3463%*	*280*	**137.36%**	*3331%*	*291*	**120.77%**	*3059%*	*304*	**82.70%**	*848%*	*123*
7	**112.06%**	*654%*	*70*	**148.41%**	*3463%*	*280*	**160.20%**	*3379%*	*270*	**123.13%**	*2114%*	*206*	**70.43%**	*646%*	*110*
8	**121.27%**	*616%*	*61*	**151.13%**	*3337%*	*265*	**160.20%**	*3379%*	*270*	**123.13%**	*2114%*	*206*	**70.43%**	*646%*	*110*
9	**121.27%**	*616%*	*61*	**163.08%**	*3071%*	*226*	**193.17%**	*2559%*	*159*	**122.31%**	*836%*	*82*	**75.68%**	*227%*	*36*
10	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**122.31%**	*836%*	*82*	**75.68%**	*227%*	*36*
11	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**101.25%**	*363%*	*43*	**384.84%**	*96%*	*3*
12	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**181.14%**	*151%*	*10*	**0.00%**	*0%*	*0*
13	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
14	**144.23%**	*589%*	*49*	**153.60%**	*2125%*	*166*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
15	**144.23%**	*589%*	*49*	**130.77%**	*1449%*	*133*	**191.71%**	*2061%*	*129*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
16	**144.23%**	*589%*	*49*	**111.23%**	*1010%*	*109*	**205.74%**	*2006%*	*117*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
17	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.88%**	*1007%*	*84*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
18	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.03%**	*870%*	*73*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
19	**149.07%**	*559%*	*45*	**105.53%**	*572%*	*65*	**132.70%**	*774%*	*70*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
20	**149.07%**	*559%*	*45*	**107.93%**	*495%*	*55*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
21	**145.43%**	*436%*	*36*	**108.26%**	*469%*	*52*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
22	**145.43%**	*436%*	*36*	**100.32%**	*401%*	*48*	**128.94%**	*645%*	*60*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
23	**145.43%**	*436%*	*36*	**92.46%**	*331%*	*43*	**133.07%**	*588%*	*53*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
24	**145.43%**	*436%*	*36*	**88.53%**	*310%*	*42*	**141.16%**	*353%*	*30*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
25	**145.43%**	*436%*	*36*	**86.52%**	*288%*	*40*	**135.57%**	*226%*	*20*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
26	**145.43%**	*436%*	*36*	**65.69%**	*169%*	*31*	**109.63%**	*46%*	*5*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
27	**146.01%**	*365%*	*30*	**53.72%**	*81%*	*18*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.45	1	2.89	0.0019	MTB	≤	0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.505	2	5.44	0.0000	CH_TA(-12m)	≤	0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.56	3	6.70	0.0000	DY	≤	0.0277	7.90	7.38%	75	103.14%	42.27%	5.756	2.188
0.615	4	7.01	0.0000	NOSHARES	≤	81392	2.57	2.40%	44	130.61%	35.84%	12.546	3.353
0.67	5	6.77	0.0000	POS_NET	≥	16.0000	2.47	2.31%	42	135.56%	37.13%	12.398	3.373
0.725	6	6.45	0.0000	ROE	≤	0.2124	2.37	2.21%	41	135.91%	37.83%	11.828	3.321
0.78	7	6.03	0.0000	CH_INVTURN(-12m)	≥	-2.3977	2.00	1.87%	39	147.34%	45.38%	9.514	3.014
0.835	8	5.76	0.0000	CH_SALES(-9m)	≥	-0.0714	1.72	1.60%	38	155.54%	48.20%	9.255	3.008
0.89	9	5.55	0.0000	ROE(-9m)	≥	-0.0748	1.67	1.56%	37	160.40%	49.37%	9.251	3.035
0.945	10	5.19	0.0000	EY(-12m)	≥	-0.0335	1.57	1.46%	34	169.84%	47.66%	10.969	3.338
1	11	4.92	0.0000	OPINCITA	≤	0.0380	1.33	1.25%	32	175.60%	47.84%	11.475	3.446
1	12	4.67	0.0000	ROA	≤	-0.0012	1.28	1.20%	29	174.60%	46.34%	11.926	3.540
1	13	4.39	0.0000	POS_OP	≥	16.0000	1.23	1.15%	26	167.78%	46.16%	10.944	3.405
1	14	4.09	0.0000	EY(-9m)	≥	0.1346	1.18	1.11%	23	159.76%	48.51%	8.864	3.074
1	15	3.76	0.0001	PRETAX_PM	≤	-0.0010	0.95	0.89%	20	159.12%	52.39%	7.440	2.833
1	16	3.27	0.0006	CH_DPS(-12m)	≥	-0.5693	0.83	0.78%	15	133.89%	58.19%	4.214	2.116
1	17	3.13	0.0009	MOM_3(-6m)	≥	-0.0962	0.82	0.76%	14	130.29%	58.43%	3.908	2.047
1	18	2.98	0.0015	MOM_6(-6m)	≥	-0.3419	0.80	0.75%	13	126.98%	55.91%	4.002	2.079
1	19	2.82	0.0024	CH_ARISALES	≤	-0.0592	0.60	0.56%	12	125.33%	55.50%	3.907	2.064
1	20	2.66	0.0040	MOM_3(-9m)	≥	-0.2131	0.60	0.56%	11	123.57%	55.50%	3.751	2.032
1	21	2.47	0.0068	DY(-9m)	≥	0.0439	0.60	0.56%	10	123.52%	55.50%	3.703	2.031
1	22	2.27	0.0117	DY(-12m)	≥	0.0413	0.60	0.56%	9	123.21%	55.50%	3.640	2.025
1	23	2.01	0.0220	CH_INVISALES(-9m)	≤	-0.1123	0.57	0.53%	7	122.12%	56.80%	3.374	1.963
1	24	1.75	0.0401	MOM_6(-3m)	≥	-0.0912	0.55	0.51%	6	118.83%	57.60%	3.070	1.880
1	25	1.26	0.1042	CH_TA(-6m)	≤	0.0968	0.48	0.45%	4	121.43%	59.62%	2.958	1.858
1	26	0.91	0.1807	SDEV_VOL(-6m)	≥	-0.9470	0.28	0.26%	3	111.40%	37.56%	6.200	2.684

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**47.63%**	*3584%*	*903*
2	**28.54%**	*930%*	*391*	**70.85%**	*10126%*	*1715*	**75.77%**	*9042%*	*1432*	**91.51%**	*8007%*	*1050*	**61.14%**	*2425%*	*476*
3	**75.94%**	*721%*	*114*	**94.72%**	*4452%*	*564*	**97.90%**	*4887%*	*599*	**140.37%**	*5989%*	*512*	**77.20%**	*2001%*	*311*
4	**121.27%**	*616%*	*61*	**145.21%**	*3521%*	*291*	**152.30%**	*3516%*	*277*	**94.46%**	*937%*	*119*	**78.84%**	*683%*	*104*
5	**121.27%**	*616%*	*61*	**144.20%**	*3365%*	*280*	**173.06%**	*3202%*	*222*	**100.37%**	*945%*	*113*	**78.84%**	*683%*	*104*
6	**121.27%**	*616%*	*61*	**144.20%**	*3365%*	*280*	**172.49%**	*3062%*	*213*	**106.07%**	*972%*	*110*	**78.84%**	*683%*	*104*
7	**121.27%**	*616%*	*61*	**152.06%**	*3130%*	*247*	**171.43%**	*3000%*	*210*	**122.31%**	*836%*	*82*	**75.68%**	*227%*	*36*
8	**121.27%**	*616%*	*61*	**163.08%**	*3071%*	*226*	**193.17%**	*2559%*	*159*	**122.31%**	*836%*	*82*	**75.68%**	*227%*	*36*
9	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**122.31%**	*836%*	*82*	**75.68%**	*227%*	*36*
10	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**101.25%**	*363%*	*43*	**384.84%**	*96%*	*3*
11	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**181.14%**	*151%*	*10*	**0.00%**	*0%*	*0*
12	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
13	**144.23%**	*589%*	*49*	**153.60%**	*2125%*	*166*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
14	**144.23%**	*589%*	*49*	**130.77%**	*1449%*	*133*	**191.71%**	*2061%*	*129*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
15	**144.23%**	*589%*	*49*	**111.23%**	*1010%*	*109*	**205.74%**	*2006%*	*117*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
16	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.88%**	*1007%*	*84*	**652.98%**	*54%*	*1*	**0.00%**	*0%*	*0*
17	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.03%**	*870%*	*73*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
18	**149.07%**	*559%*	*45*	**105.53%**	*572%*	*65*	**132.70%**	*774%*	*70*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
19	**149.07%**	*559%*	*45*	**107.93%**	*495%*	*55*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
20	**145.43%**	*436%*	*36*	**108.26%**	*469%*	*52*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
21	**145.43%**	*436%*	*36*	**100.32%**	*401%*	*48*	**128.94%**	*645%*	*60*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
22	**145.43%**	*436%*	*36*	**92.46%**	*331%*	*43*	**133.07%**	*588%*	*53*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
23	**145.43%**	*436%*	*36*	**88.53%**	*310%*	*42*	**141.16%**	*353%*	*30*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
24	**145.43%**	*436%*	*36*	**86.52%**	*288%*	*40*	**135.57%**	*226%*	*20*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
25	**145.43%**	*436%*	*36*	**73.56%**	*166%*	*27*	**169.08%**	*127%*	*9*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
26	**146.01%**	*365%*	*30*	**53.72%**	*81%*	*18*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*

Appendix D.10.B Results for dynamic comparison level tests: restricted sample

Continued: Length = ten filters; Initial comparison level = 50 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.5	1	1.39	0.0830	OPINCITA	≤	-0.0455	7.35	6.87%	87	76.31%	57.14%	1.793	1.150
0.55	2	4.48	0.0000	POS_NET	≥	18.0000	4.12	3.85%	68	118.59%	93.35%	1.581	1.157
0.6	3	5.69	0.0000	CH_TA(-9m)	≤	0.3757	3.42	3.19%	65	146.64%	105.32%	1.866	1.291
0.65	4	5.91	0.0000	CH_INVTURN(-6m)	≥	-2.3977	3.10	2.90%	64	163.67%	120.83%	1.737	1.267
0.7	5	5.73	0.0000	DY	≤	0.0036	2.85	2.66%	64	168.73%	125.10%	1.696	1.265
0.75	6	5.60	0.0000	NOSHARES	≤	162222	2.27	2.12%	57	180.46%	153.57%	1.267	1.106
0.8	7	5.63	0.0000	PRETAX_PM	≤	-0.0358	2.22	2.07%	57	186.67%	154.46%	1.320	1.140
0.85	8	5.52	0.0000	MTB	≤	3.6700	1.92	1.79%	42	232.65%	132.31%	2.749	1.683
0.9	9	5.36	0.0000	CH_DEP	≤	0.5228	1.87	1.74%	40	240.18%	127.15%	3.127	1.810
0.95	10	5.16	0.0000	CH_ASSTURN(-6m)	≥	-0.2930	1.60	1.50%	37	250.79%	126.38%	3.402	1.904
1	11	4.95	0.0000	CH_ASSTURN	≥	-0.0061	1.37	1.28%	34	259.81%	128.97%	3.457	1.935
1	12	4.87	0.0000	CH_INVITA(-12m)	≥	-0.0248	1.35	1.26%	33	260.55%	125.05%	3.648	2.002
1	13	4.60	0.0000	CH_TA(-12m)	≤	0.2605	1.30	1.21%	30	248.97%	127.25%	3.173	1.877
1	14	4.22	0.0000	SALESICASH	≥	5.4257	1.05	0.98%	26	229.70%	86.59%	5.754	2.532
1	15	3.76	0.0001	SDEV_VOL	≥	-0.4409	0.87	0.81%	18	252.95%	56.51%	16.159	4.289
1	16	3.66	0.0002	CH_INVITA	≥	-0.0250	0.67	0.62%	17	258.74%	60.97%	14.337	4.070
1	17	3.55	0.0002	EY(-12m)	≥	-0.0335	0.65	0.61%	16	246.79%	62.03%	12.438	3.808
1	18	3.20	0.0007	EY(-9m)	≥	0.0034	0.60	0.56%	13	216.64%	72.02%	7.021	2.860
1	19	3.07	0.0011	SDEV_VOL(-9m)	≥	0.2307	0.58	0.55%	12	217.15%	78.98%	5.792	2.613
1	20	2.94	0.0017	CAPGEAR	≥	0.4461	0.38	0.36%	11	220.11%	93.91%	4.157	2.229
1	21	2.80	0.0026	SDEV_VOL(-12m)	≥	0.2594	0.38	0.36%	10	225.06%	93.91%	4.293	2.281
1	22	2.65	0.0040	EARNG_24(-12m)	≥	-0.1674	0.37	0.34%	9	232.56%	95.43%	4.387	2.323
1	23	2.11	0.0173	SDEV_VOL(-6m)	≥	0.3231	0.32	0.30%	6	236.44%	100.72%	4.022	2.243
1	24	0.80	0.2114	MOM_3(-9m)	≥	-0.2761	0.28	0.26%	2	184.79%	89.40%	3.081	1.949

No	2000			2001			2002			2003			2004		
1	**4.32%**	*128%*	*356*	**42.93%**	*3706%*	*1036*	**142.55%**	*9491%*	*799*	**81.06%**	*4614%*	*683*	**85.51%**	*3121%*	*438*
2	**-18.60%**	*-229%*	*148*	**83.69%**	*4010%*	*575*	**214.84%**	*8271%*	*462*	**98.83%**	*2965%*	*360*	**131.67%**	*2535%*	*231*
3	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**207.25%**	*7568%*	*444*	**98.83%**	*2965%*	*360*	**141.35%**	*2580%*	*219*
4	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**227.61%**	*7568%*	*399*	**126.35%**	*2369%*	*225*	**151.44%**	*2158%*	*171*
5	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**232.58%**	*7539%*	*389*	**142.38%**	*2219%*	*187*	**151.44%**	*2158%*	*171*
6	**54.02%**	*167%*	*37*	**140.08%**	*3841%*	*329*	**254.20%**	*7075%*	*334*	**204.14%**	*2586%*	*152*	**94.87%**	*949%*	*120*
7	**56.28%**	*169%*	*36*	**155.67%**	*3827%*	*295*	**253.33%**	*7030%*	*333*	**204.14%**	*2586%*	*152*	**94.87%**	*949%*	*120*
8	**56.28%**	*169%*	*36*	**155.70%**	*3620%*	*279*	**387.44%**	*5295%*	*164*	**592.10%**	*1086%*	*22*	**169.71%**	*1230%*	*87*
9	**27.54%**	*34%*	*15*	**154.68%**	*3403%*	*264*	**387.44%**	*5295%*	*164*	**592.10%**	*1086%*	*22*	**169.71%**	*1230%*	*87*
10	**27.54%**	*34%*	*15*	**154.68%**	*3403%*	*264*	**387.44%**	*5295%*	*164*	**-41.58%**	*-24%*	*7*	**449.75%**	*1574%*	*42*
11	**27.54%**	*34%*	*15*	**161.11%**	*3222%*	*240*	**399.98%**	*5066%*	*152*	**-41.58%**	*-24%*	*7*	**449.75%**	*1574%*	*42*
12	**27.54%**	*34%*	*15*	**161.17%**	*3156%*	*235*	**405.60%**	*4900%*	*145*	**-41.58%**	*-24%*	*7*	**449.75%**	*1574%*	*42*
13	**27.54%**	*34%*	*15*	**152.09%**	*2788%*	*220*	**396.04%**	*4092%*	*124*	**-41.58%**	*-24%*	*7*	**449.75%**	*1574%*	*42*
14	**27.54%**	*34%*	*15*	**152.09%**	*2788%*	*220*	**396.04%**	*4092%*	*124*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
15	**0.00%**	*0%*	*2*	**136.99%**	*1393%*	*122*	**400.50%**	*3438%*	*103*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
16	**0.00%**	*0%*	*0*	**133.28%**	*1244%*	*112*	**400.50%**	*3438%*	*103*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
17	**0.00%**	*0%*	*0*	**131.89%**	*1154%*	*105*	**376.39%**	*3066%*	*98*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
18	**0.00%**	*0%*	*0*	**124.22%**	*807%*	*78*	**303.35%**	*2250%*	*89*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
19	**0.00%**	*0%*	*0*	**116.60%**	*645%*	*67*	**300.24%**	*2202%*	*88*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
20	**0.00%**	*0%*	*0*	**101.19%**	*464%*	*55*	**300.24%**	*2202%*	*88*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
21	**0.00%**	*0%*	*0*	**100.81%**	*420%*	*50*	**308.13%**	*2080%*	*81*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
22	**0.00%**	*0%*	*0*	**102.93%**	*343%*	*40*	**304.82%**	*2007%*	*79*	**-291.03%**	*-24%*	*1*	**0.00%**	*0%*	*0*
23	**0.00%**	*0%*	*0*	**104.18%**	*339%*	*39*	**351.06%**	*1316%*	*45*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*
24	**0.00%**	*0%*	*0*	**37.99%**	*47%*	*15*	**289.66%**	*507%*	*21*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*

Appendix D.10.C Results for dynamic comparison level tests: restricted sample

Continued: Length = fifteen filters; Initial comparison level = 20 and 25 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.2	1	17.75	0.0000	EY(-9m)	≥	0.1158	65.07	60.81%	335	45.08%	14.63%	11.095	2.352
0.2533	2	17.67	0.0000	CH_ARISALES	≤	0.0922	47.15	44.07%	245	55.79%	14.88%	15.183	3.039
0.3067	3	15.93	0.0000	CH_INVITA(-12m)	≥	-0.0248	36.35	33.97%	192	60.79%	16.88%	13.377	2.983
0.36	4	14.67	0.0000	EARNG_12	≥	0.0248	21.83	20.40%	128	73.33%	15.95%	20.738	3.959
0.4133	5	13.21	0.0000	EY(-12m)	≥	0.1232	18.78	17.55%	118	76.51%	16.13%	21.632	4.114
0.4667	6	11.82	0.0000	NOSHARES	≤	178388	14.38	13.44%	102	78.41%	18.31%	17.242	3.720
0.52	7	10.15	0.0000	NTC	≥	24.0407	12.80	11.96%	99	81.13%	19.20%	16.508	3.686
0.5733	8	9.21	0.0000	CH_EBTISALES(-12m)	≥	-0.4683	11.03	10.31%	95	86.35%	19.79%	17.257	3.849
0.6267	9	8.26	0.0000	CH_TA(-12m)	≤	0.1513	6.20	5.79%	65	90.54%	19.08%	19.952	4.202
0.68	10	8.19	0.0000	POS_OP	≥	12.0000	3.68	3.44%	52	102.78%	27.64%	12.020	3.337
0.7333	11	7.51	0.0000	MOM_6(-3m)	≥	-0.1438	3.63	3.40%	51	104.92%	26.49%	13.439	3.566
0.7867	12	6.92	0.0000	CH_INVITA	≥	-0.0083	2.62	2.45%	43	115.85%	27.40%	15.072	3.831
0.84	13	6.22	0.0000	CH_TA(-9m)	≤	0.2363	2.57	2.40%	42	116.99%	27.76%	14.762	3.818
0.8933	14	5.40	0.0000	CH_DPS(-12m)	≥	-0.5693	2.07	1.93%	35	121.92%	29.71%	13.795	3.747
0.9467	15	4.76	0.0000	POS_ROE	≥	15.0000	1.53	1.43%	32	129.35%	30.77%	14.282	3.862
1	16	4.35	0.0000	ROE	≤	0.2556	1.13	1.06%	28	137.20%	29.07%	17.752	4.362
1	17	4.32	0.0000	CH_SALES(-9m)	≥	0.0716	0.98	0.92%	24	149.55%	31.23%	18.030	4.476
1	18	4.25	0.0000	DY(-12m)	≥	0.0474	0.97	0.90%	23	151.09%	31.56%	17.793	4.478
1	19	4.16	0.0000	MTB	≤	1.6700	0.95	0.89%	22	152.01%	32.02%	17.281	4.442
1	20	4.06	0.0000	ROA	≤	0.1197	0.75	0.70%	21	153.45%	32.57%	16.815	4.413
1	21	3.96	0.0001	MOM_3(-9m)	≥	-0.1501	0.75	0.70%	20	153.31%	32.76%	16.388	4.383
1	22	3.75	0.0001	MOM_3(-6m)	≥	-0.0962	0.75	0.70%	18	152.64%	33.41%	15.429	4.282
1	23	3.64	0.0002	MOM_6(-6m)	≥	0.0686	0.75	0.70%	17	150.89%	33.42%	14.888	4.225
1	24	3.21	0.0007	CH_INVISALES(-9m)	≤	0.0949	0.67	0.62%	13	153.40%	35.98%	13.119	3.986
1	25	2.94	0.0017	CH_ASSTURN(-6m)	≥	-0.0316	0.60	0.56%	11	152.01%	38.15%	11.327	3.721
1	26	2.49	0.0065	SALESICASH	≥	-28.0377	0.33	0.31%	8	163.09%	47.18%	8.423	3.263
1	27	2.11	0.0173	POS_OP(-12m)	≤	28.0000	0.30	0.28%	6	145.45%	47.93%	6.418	2.838
1	28	1.89	0.0296	CH_INVTURN(-6m)	≥	-1.2918	0.28	0.26%	5	137.81%	49.37%	5.371	2.598
1	29	1.62	0.0528	EARNG_24(-9m)	≥	-0.0560	0.27	0.25%	4	130.94%	50.87%	4.516	2.382
1	30	0.80	0.2114	SDEV_VOL(-6m)	≥	-0.9470	0.23	0.22%	2	119.26%	54.48%	3.231	2.002

No	2000			2001			2002			2003			2004		
1	**1.63%**	*374%*	*2763*	**42.20%**	*21509%*	*6116*	**42.28%**	*25958%*	*7368*	**69.03%**	*38475%*	*7821*	**55%**	*21916%*	*4744*
2	**14.02%**	*1547%*	*1324*	**49.67%**	*13468%*	*3254*	**53.10%**	*19374%*	*4378*	**70.09%**	*29986%*	*5134*	**60%**	*17421%*	*3502*
3	**13.16%**	*782%*	*713*	**51.64%**	*9696%*	*2253*	**58.51%**	*14004%*	*2872*	**74.40%**	*23419%*	*3777*	**64%**	*15866%*	*2973*
4	**15.03%**	*381%*	*304*	**61.16%**	*5341%*	*1048*	**66.96%**	*6952%*	*1246*	**84.09%**	*15311%*	*2185*	**81%**	*13738%*	*2045*
5	**12.26%**	*277%*	*271*	**69.62%**	*4789%*	*964*	**74.86%**	*6663%*	*1068*	**87.38%**	*13610%*	*1869*	**86%**	*12610%*	*1780*
6	**-3.51%**	*-52%*	*178*	**63.99%**	*3989%*	*748*	**76.78%**	*6372%*	*996*	**90.79%**	*12007%*	*1587*	**84%**	*9597%*	*1375*
7	**-7.17%**	*-79%*	*133*	**62.67%**	*3400%*	*652*	**76.90%**	*6325%*	*987*	**91.92%**	*11115%*	*1451*	**92%**	*9014%*	*1181*
8	**-13.78%**	*-127%*	*111*	**65.34%**	*2472%*	*454*	**76.00%**	*4332%*	*684*	**101.29%**	*10745%*	*1273*	**94%**	*8914%*	*1138*
9	**7.85%**	*38%*	*58*	**77.52%**	*2145%*	*332*	**85.84%**	*3512%*	*491*	**112.77%**	*7180%*	*764*	**81%**	*3784%*	*563*
10	**-20.88%**	*-10%*	*6*	**76.76%**	*1247%*	*195*	**94.29%**	*2491%*	*317*	**119.59%**	*5740%*	*576*	**99%**	*2762%*	*334*
11	**13.67%**	*3%*	*3*	**79.05%**	*1146%*	*174*	**97.42%**	*2216%*	*273*	**120.49%**	*5623%*	*560*	**99%**	*2762%*	*334*
12	**0.00%**	*0%*	*0*	**35.25%**	*62%*	*21*	**111.70%**	*1871%*	*201*	**117.36%**	*4841%*	*495*	**124%**	*2147%*	*207*
13	**0.00%**	*0%*	*0*	**35.25%**	*62%*	*21*	**111.70%**	*1871%*	*201*	**117.76%**	*4710%*	*480*	**130%**	*2014%*	*186*
14	**0.00%**	*0%*	*0*	**35.25%**	*62%*	*21*	**126.40%**	*1348%*	*128*	**122.19%**	*3533%*	*347*	**128%**	*1884%*	*176*
15	**0.00%**	*0%*	*0*	**35.25%**	*62%*	*21*	**126.97%**	*1165%*	*111*	**131.35%**	*2934%*	*268*	**142%**	*1660%*	*140*
16	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**134.47%**	*303%*	*27*	**133.11%**	*2940%*	*265*	**146%**	*1560%*	*128*
17	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**150.56%**	*2271%*	*181*	**147%**	*1528%*	*125*
18	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**149.63%**	*2170%*	*174*	**152%**	*1519%*	*120*
19	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**149.83%**	*2073%*	*166*	**154%**	*1486%*	*116*
20	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**149.81%**	*1960%*	*157*	**157%**	*1480%*	*113*
21	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**146.76%**	*1810%*	*148*	**161%**	*1474%*	*110*
22	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**146.58%**	*1539%*	*126*	**158%**	*1424%*	*108*
23	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**147.33%**	*1535%*	*125*	**154%**	*1243%*	*97*
24	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**136.41%**	*1250%*	*110*	**180%**	*961%*	*64*
25	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**125.22%**	*991%*	*95*	**195%**	*896%*	*55*
26	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**131.69%**	*593%*	*54*	**194%**	*875%*	*54*
27	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**124.19%**	*507%*	*49*	**175%**	*511%*	*35*
28	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**117.46%**	*440%*	*45*	**172%**	*386%*	*27*
29	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**110.86%**	*370%*	*40*	**171%**	*285%*	*20*
30	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**105.92%**	*238%*	*27*	**159%**	*119%*	*9*

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.25	1	13.64	0.0000	EY(-12m)	≥	0.1493	49.70	46.45%	288	49.85%	16.09%	10.666	2.433
0.3	2	15.25	0.0000	CH_ARISALES	≤	0.0922	35.60	33.27%	216	62.45%	16.65%	14.717	3.109
0.35	3	14.32	0.0000	CH_ASSTURN(-12m)	≥	-0.1046	25.73	24.05%	175	68.28%	18.59%	13.624	3.098
0.4	4	13.30	0.0000	NOSHARES	≤	146056	17.58	16.43%	137	73.99%	19.97%	13.450	3.171
0.45	5	12.69	0.0000	CH_DEP	≤	0.3852	15.48	14.47%	131	78.51%	19.23%	16.004	3.526
0.5	6	11.63	0.0000	PRETAX_PM	≤	0.1730	14.27	13.33%	131	81.83%	19.83%	16.071	3.590
0.55	7	10.68	0.0000	CH_INVITA	≥	-0.0083	10.48	9.80%	108	86.45%	21.70%	14.640	3.496
0.6	8	9.32	0.0000	CH_TA(-9m)	≤	0.3757	10.15	9.49%	107	87.78%	21.60%	15.000	3.577
0.65	9	7.91	0.0000	MOM_6(-6m)	≥	-0.1785	10.07	9.41%	100	90.17%	22.12%	14.843	3.602
0.7	10	6.76	0.0000	CH_EBTISALES(-12m)	≥	-0.6120	8.77	8.19%	91	93.05%	23.18%	14.144	3.564
0.75	11	6.29	0.0000	POS_NET	≥	20.0000	3.48	3.26%	47	107.06%	30.76%	10.361	3.125
0.8	12	6.51	0.0000	CH_DEP(-12m)	≤	0.3075	2.88	2.69%	46	117.16%	32.96%	10.645	3.231
0.85	13	6.17	0.0000	ROE(-9m)	≥	-0.0748	2.78	2.60%	45	120.46%	33.82%	10.541	3.243
0.9	14	5.67	0.0000	MOM_3(-9m)	≥	-0.0872	2.67	2.49%	38	122.55%	30.71%	13.048	3.636
0.95	15	5.16	0.0000	CH_INVTURN(-12m)	≥	-0.7389	2.28	2.13%	37	126.08%	31.15%	13.240	3.691
1	16	4.78	0.0000	ACCITA	≤	0.0654	1.77	1.65%	31	136.52%	39.56%	9.492	3.178
1	17	4.71	0.0000	CH_SALES(-9m)	≥	0.0001	1.50	1.40%	29	141.81%	40.58%	9.606	3.228
1	18	4.63	0.0000	EY(-9m)	≥	0.1346	1.50	1.40%	28	141.86%	40.52%	9.521	3.233
1	19	4.36	0.0000	MTB	≤	3.1700	1.45	1.36%	25	140.98%	41.26%	8.957	3.152
1	20	4.17	0.0000	CAPGEAR	≥	0.0269	1.22	1.14%	23	137.27%	42.44%	7.925	2.978
1	21	4.07	0.0000	DY(-9m)	≥	0.0439	1.22	1.14%	22	137.82%	41.83%	8.124	3.035
1	22	3.90	0.0001	CH_DPS(-9m)	≥	-0.4286	1.15	1.07%	20	140.26%	41.39%	8.490	3.124
1	23	3.79	0.0001	CH_DPS(-12m)	≥	-0.4221	1.13	1.06%	19	138.06%	37.97%	9.659	3.348
1	24	3.68	0.0001	DY(-12m)	≥	0.0474	1.13	1.06%	18	137.30%	36.17%	10.406	3.495
1	25	3.56	0.0002	MOM_6(-3m)	≥	-0.0912	1.10	1.03%	17	136.71%	33.41%	11.950	3.768
1	26	3.41	0.0004	CH_QUICK	≤	0.0110	0.88	0.83%	15	135.48%	31.17%	13.326	4.001
1	27	3.14	0.0009	EARNG_24(-12m)	≥	-0.0470	0.82	0.76%	13	138.01%	32.04%	12.936	3.965
1	28	3.01	0.0014	OPINCITA	≤	0.1633	0.62	0.58%	12	137.62%	33.77%	11.453	3.749
1	29	2.65	0.0040	EARNG_24(-9m)	≥	0.0333	0.55	0.51%	9	140.22%	34.62%	11.184	3.711
1	30	2.49	0.0065	CH_ASSTURN(-6m)	≥	-0.0316	0.52	0.48%	8	136.67%	32.43%	11.980	3.846
1	31	1.89	0.0296	SDEV_VOL	≥	-0.4409	0.28	0.26%	5	138.07%	35.71%	9.971	3.535
1	32	1.28	0.1006	MOM_3(-6m)	≥	-0.0962	0.27	0.25%	3	127.08%	36.85%	7.847	3.118
1	33	0.80	0.2114	POS_ROE	≥	19.0000	0.23	0.22%	2	120.22%	39.45%	6.062	2.730

No	2000			2001			2002			2003			2004		
1	**0.38%**	*73%*	*2293*	**46.27%**	*17300%*	*4487*	**49.72%**	*20267%*	*4891*	**67.21%**	*29417%*	*5252*	**63%**	*15398%*	*2925*
2	**15.04%**	*1446%*	*1154*	**54.72%**	*11746%*	*2576*	**62.82%**	*16071%*	*3070*	**80.14%**	*23369%*	*3499*	**68%**	*11937%*	*2109*
3	**10.32%**	*509%*	*592*	**59.66%**	*7661%*	*1541*	**68.71%**	*12310%*	*2150*	**83.34%**	*21113%*	*3040*	**69%**	*9616%*	*1677*
4	**6.84%**	*283%*	*496*	**71.10%**	*7033%*	*1187*	**77.56%**	*9954%*	*1540*	**85.85%**	*15445%*	*2159*	**79%**	*7685%*	*1170*
5	**18.07%**	*581%*	*386*	**79.26%**	*6129%*	*928*	**81.28%**	*9551%*	*1410*	**85.78%**	*14598%*	*2042*	**82%**	*7455%*	*1090*
6	**19.49%**	*554%*	*341*	**80.76%**	*5438%*	*808*	**85.63%**	*9048%*	*1268*	**89.37%**	*14255%*	*1914*	**85%**	*7449%*	*1057*
7	**46.26%**	*771%*	*200*	**81.35%**	*4494%*	*663*	**83.52%**	*6229%*	*895*	**88.26%**	*11466%*	*1559*	**100%**	*6951%*	*835*
8	**46.26%**	*771%*	*200*	**81.35%**	*4494%*	*663*	**86.58%**	*6132%*	*850*	**91.46%**	*10967%*	*1439*	**98%**	*6691%*	*820*
9	**48.90%**	*750%*	*184*	**80.89%**	*3296%*	*489*	**92.87%**	*6021%*	*778*	**92.44%**	*10207%*	*1325*	**99%**	*6507%*	*788*
10	**52.31%**	*715%*	*164*	**86.43%**	*3026%*	*425*	**90.67%**	*5085%*	*673*	**97.75%**	*8871%*	*1089*	**102%**	*5847%*	*685*
11	**132.26%**	*727%*	*66*	**76.68%**	*984%*	*156*	**106.66%**	*3295%*	*371*	**124.26%**	*3759%*	*363*	**88%**	*1084%*	*148*
12	**132.26%**	*727%*	*66*	**80.09%**	*894%*	*134*	**123.16%**	*2309%*	*225*	**139.20%**	*3654%*	*315*	**88%**	*1084%*	*148*
13	**131.50%**	*658%*	*60*	**82.13%**	*712%*	*104*	**123.16%**	*2309%*	*225*	**139.72%**	*3598%*	*309*	**93%**	*915%*	*118*
14	**143.33%**	*358%*	*30*	**83.49%**	*515%*	*74*	**129.90%**	*2306%*	*213*	**134.63%**	*3150%*	*281*	**95%**	*779%*	*98*
15	**143.33%**	*358%*	*30*	**83.49%**	*515%*	*74*	**129.90%**	*2306%*	*213*	**137.13%**	*2834%*	*248*	**110%**	*543%*	*59*
16	**143.33%**	*358%*	*30*	**102.61%**	*453%*	*53*	**135.52%**	*1265%*	*112*	**155.07%**	*2313%*	*179*	**109%**	*525%*	*58*
17	**0.00%**	*0%*	*0*	**152.93%**	*293%*	*23*	**135.52%**	*1265%*	*112*	**155.07%**	*2313%*	*179*	**109%**	*525%*	*58*
18	**0.00%**	*0%*	*0*	**152.93%**	*293%*	*23*	**135.52%**	*1265%*	*112*	**156.87%**	*2249%*	*172*	**102%**	*449%*	*53*
19	**0.00%**	*0%*	*0*	**152.93%**	*293%*	*23*	**135.52%**	*1265%*	*112*	**150.10%**	*1814%*	*145*	**119%**	*435%*	*44*
20	**0.00%**	*0%*	*0*	**152.93%**	*293%*	*23*	**136.89%**	*1266%*	*111*	**141.93%**	*1455%*	*123*	**117%**	*418%*	*43*
21	**0.00%**	*0%*	*0*	**142.29%**	*225%*	*19*	**140.97%**	*1210%*	*103*	**141.93%**	*1455%*	*123*	**117%**	*418%*	*43*
22	**0.00%**	*0%*	*0*	**204.76%**	*102%*	*6*	**144.89%**	*1111%*	*92*	**141.93%**	*1455%*	*123*	**117%**	*418%*	*43*
23	**0.00%**	*0%*	*0*	**171.66%**	*43%*	*3*	**142.27%**	*984%*	*83*	**141.93%**	*1455%*	*123*	**117%**	*418%*	*43*
24	**0.00%**	*0%*	*0*	**128.67%**	*21%*	*2*	**142.01%**	*852%*	*72*	**141.93%**	*1455%*	*123*	**117%**	*418%*	*43*
25	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**140.34%**	*725%*	*62*	**141.93%**	*1455%*	*123*	**117%**	*418%*	*43*
26	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**149.29%**	*485%*	*39*	**137.74%**	*1400%*	*122*	**117%**	*418%*	*43*
27	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**149.29%**	*485%*	*39*	**146.08%**	*1193%*	*98*	**98%**	*254%*	*31*
28	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**149.29%**	*485%*	*39*	**147.70%**	*1095%*	*89*	**89%**	*208%*	*28*
29	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**149.29%**	*485%*	*39*	**131.64%**	*811%*	*74*	**181%**	*106%*	*7*
30	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**149.29%**	*485%*	*39*	**122.78%**	*675%*	*66*	**278%**	*70%*	*3*
31	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**127.56%**	*670%*	*63*	**278%**	*70%*	*3*
32	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**116.70%**	*399%*	*41*	**245%**	*20%*	*1*
33	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**178.36%**	*89%*	*6*	**108.59%**	*271%*	*30*	**0%**	*0%*	*0*

Appendix D.10.C Results for dynamic comparison level tests: restricted sample

Continued: Length = fifteen filters; Initial comparison level = 30 and 35 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.3	1	10.40	0.0000	EY(-12m)	≥	0.1493	49.70	46.45%	288	49.85%	16.09%	10.666	2.433
0.3467	2	13.05	0.0000	CH_ARISALES	≤	0.0922	35.60	33.27%	216	62.45%	16.65%	14.717	3.109
0.3933	3	12.65	0.0000	CH_ASSTURN(-12m)	≥	-0.1046	25.73	24.05%	175	68.28%	18.59%	13.624	3.098
0.44	4	12.27	0.0000	EARNG_12	≥	0.0315	16.00	14.95%	96	81.17%	19.17%	17.326	3.696
0.4867	5	11.65	0.0000	ROA(-12m)	≥	-0.0074	14.27	13.33%	93	83.38%	22.13%	13.492	3.300
0.5333	6	10.59	0.0000	PRETAX_PM	≤	0.1730	13.03	12.18%	93	85.95%	22.60%	13.516	3.343
0.58	7	9.67	0.0000	OPINCITA(-12m)	≥	0.0483	11.32	10.58%	91	90.02%	23.24%	13.780	3.431
0.6267	8	9.04	0.0000	CH_DEP	≤	0.3852	8.95	8.36%	79	96.37%	21.00%	18.992	4.104
0.6733	9	8.43	0.0000	POS_OP	≥	8.0000	6.38	5.97%	71	106.38%	24.01%	17.365	4.006
0.72	10	8.10	0.0000	ROE(-9m)	≥	0.1204	5.23	4.89%	68	115.92%	26.19%	17.053	4.042
0.7667	11	7.64	0.0000	ROE(-12m)	≥	0.1030	4.72	4.41%	68	119.51%	27.34%	16.387	4.002
0.8133	12	7.18	0.0000	EARNG_24(-12m)	≥	0.0333	2.85	2.66%	50	129.71%	28.68%	17.242	4.164
0.86	13	6.81	0.0000	MTB	≤	2.1700	2.77	2.59%	49	131.17%	28.26%	17.917	4.276
0.9067	14	6.26	0.0000	POS_ROE	≥	3.0000	2.37	2.21%	47	138.69%	29.91%	17.621	4.285
0.9533	15	5.72	0.0000	CH_ASSTURN(-6m)	≥	-0.0970	2.33	2.18%	46	139.41%	29.71%	17.810	4.339
1	16	5.13	0.0000	ACCITA	≤	0.0884	1.80	1.68%	37	157.11%	26.80%	27.399	5.492
1	17	5.04	0.0000	CH_TA	≤	0.3215	1.60	1.50%	36	156.01%	25.93%	28.491	5.632
1	18	4.96	0.0000	MOM_3(-9m)	≥	-0.1501	1.60	1.50%	35	156.00%	25.89%	28.216	5.640
1	19	4.81	0.0000	NOSHARES	≤	97558	1.55	1.45%	32	160.32%	26.00%	29.173	5.776
1	20	4.80	0.0000	CH_TA(-6m)	≤	0.2556	1.50	1.40%	30	166.24%	26.37%	30.136	5.916
1	21	4.63	0.0000	MOM_6(-3m)	≥	-0.0386	1.50	1.40%	28	162.26%	26.13%	28.882	5.813
1	22	4.46	0.0000	ROE	≥	0.2988	1.27	1.18%	26	167.58%	27.22%	28.038	5.772
1	23	4.37	0.0000	POS_NET	≥	14.0000	1.22	1.14%	25	168.78%	27.29%	27.947	5.801
1	24	4.19	0.0000	MOM_3(-6m)	≥	-0.0952	1.22	1.14%	23	169.51%	27.74%	26.979	5.737
1	25	3.99	0.0001	MOM_6(-6m)	≥	0.0666	1.17	1.09%	21	167.18%	27.75%	25.915	5.650
1	26	3.79	0.0001	EY(-9m)	≥	0.1346	1.13	1.06%	19	171.24%	29.19%	24.289	5.504
1	27	3.72	0.0001	DY(-9m)	≥	0.0439	1.12	1.04%	18	174.70%	29.45%	24.553	5.569
1	28	3.61	0.0002	OPINCITA	≤	0.1216	0.92	0.86%	17	177.86%	29.88%	24.446	5.591
1	29	3.39	0.0004	DY(-12m)	≥	0.0044	0.88	0.83%	15	166.91%	25.17%	29.991	6.213
1	30	3.14	0.0009	CH_DPS(-12m)	≥	-0.5693	0.83	0.78%	13	170.85%	26.90%	27.214	5.971
1	31	3.01	0.0014	CAPGEAR	≥	0.0269	0.63	0.59%	12	169.85%	31.86%	18.970	5.017
1	32	2.65	0.0040	EARNG_24(-9m)	≥	0.0333	0.58	0.55%	9	182.12%	33.06%	20.030	5.193
1	33	2.31	0.0105	CH_INVTURN(-6m)	≥	-0.7389	0.52	0.48%	7	187.03%	36.53%	17.115	4.828
1	34	2.11	0.0173	SDEV_VOL	≥	-0.4409	0.50	0.47%	6	173.70%	36.71%	14.464	4.433
1	35	1.26	0.1006	CH_INVITA	≥	0.0083	0.27	0.25%	3	127.08%	36.85%	7.605	3.118

No	2000			2001			2002			2003			2004		
1	0.38%	73%	2293	46.27%	17300%	4487	49.72%	20267%	4891	67.21%	29417%	5252	63%	15398%	2925
2	15.04%	1446%	1154	54.72%	11746%	2576	62.82%	16071%	3070	80.14%	23369%	3499	68%	11937%	2109
3	10.32%	509%	592	59.66%	7661%	1541	68.71%	12310%	2150	83.34%	21113%	3040	69%	9616%	1677
4	8.00%	147%	220	68.24%	3258%	573	82.79%	5312%	770	94.03%	12858%	1641	82%	8215%	1200
5	9.74%	162%	199	67.91%	3226%	570	78.71%	4854%	740	94.50%	12213%	1551	92%	8312%	1080
6	10.45%	134%	154	67.10%	2695%	482	80.29%	4817%	720	96.09%	12037%	1519	97%	8164%	1013
7	10.45%	134%	154	67.43%	2591%	461	86.44%	3966%	557	102.12%	11284%	1326	100%	7862%	946
8	29.18%	212%	87	63.95%	1790%	336	99.66%	3521%	424	100.99%	9282%	1103	109%	7457%	822
9	46.17%	162%	42	64.00%	918%	204	113.66%	2358%	249	114.24%	8606%	904	113%	5933%	629
10	0.00%	0%	0	33.18%	191%	69	118.09%	2047%	208	121.63%	8027%	792	117%	5500%	563
11	0.00%	0%	0	35.25%	62%	21	119.77%	1837%	184	123.23%	7887%	768	117%	5393%	551
12	0.00%	0%	0	35.25%	62%	21	134.17%	1476%	132	135.56%	5693%	504	124%	3016%	291
13	0.00%	0%	0	35.25%	62%	21	134.17%	1476%	132	138.44%	5411%	469	124%	2758%	266
14	0.00%	0%	0	35.25%	62%	21	134.17%	1476%	132	148.21%	4804%	389	134%	2257%	202
15	0.00%	0%	0	35.25%	62%	21	134.17%	1476%	132	148.43%	4527%	366	137%	2300%	201
16	0.00%	0%	0	0.00%	0%	0	177.70%	400%	27	167.41%	3655%	262	140%	2230%	191
17	0.00%	0%	0	0.00%	0%	0	177.70%	400%	27	167.41%	3655%	262	136%	2029%	179
18	0.00%	0%	0	0.00%	0%	0	177.70%	400%	27	166.25%	3505%	253	138%	2023%	176
19	0.00%	0%	0	0.00%	0%	0	177.70%	400%	27	166.32%	3423%	247	147%	1788%	146
20	0.00%	0%	0	0.00%	0%	0	177.70%	400%	27	166.97%	3228%	232	162%	1692%	125
21	0.00%	0%	0	0.00%	0%	0	177.70%	400%	27	167.29%	3137%	225	148%	1331%	108
22	0.00%	0%	0	0.00%	0%	0	177.70%	400%	27	168.34%	2820%	201	163%	1305%	96
23	0.00%	0%	0	0.00%	0%	0	177.70%	400%	27	171.71%	2719%	190	160%	1270%	95
24	0.00%	0%	0	0.00%	0%	0	177.70%	400%	27	174.84%	2448%	168	157%	1221%	93
25	0.00%	0%	0	0.00%	0%	0	182.31%	380%	25	174.44%	2268%	156	149%	1030%	83
26	0.00%	0%	0	0.00%	0%	0	182.31%	380%	25	174.59%	2168%	149	159%	877%	66
27	0.00%	0%	0	0.00%	0%	0	182.31%	380%	25	175.01%	2100%	144	171%	839%	59
28	0.00%	0%	0	0.00%	0%	0	182.31%	380%	25	175.04%	2013%	138	183%	809%	53
29	0.00%	0%	0	0.00%	0%	0	146.39%	171%	14	162.35%	1691%	125	183%	809%	53
30	0.00%	0%	0	0.00%	0%	0	161.85%	135%	10	165.53%	1448%	105	183%	809%	53
31	0.00%	0%	0	0.00%	0%	0	178.36%	89%	6	162.09%	1310%	97	183%	809%	53
32	0.00%	0%	0	0.00%	0%	0	178.36%	89%	6	160.13%	1026%	82	265%	706%	32
33	0.00%	0%	0	0.00%	0%	0	178.36%	89%	6	137.35%	767%	67	334%	640%	23
34	0.00%	0%	0	0.00%	0%	0	178.36%	89%	6	132.10%	683%	62	333%	444%	16
35	0.00%	0%	0	0.00%	0%	0	178.36%	89%	6	116.70%	399%	41	245%	20%	1

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.35	1	7.70	0.0000	MTB	≤	0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.3933	2	9.43	0.0000	CH_TA(-12m)	≤	0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.4367	3	8.90	0.0000	CH_INVITA(-12m)	≥	-0.0248	13.60	12.71%	78	75.08%	37.79%	3.863	1.701
0.48	4	8.16	0.0000	CH_ASSTURN(-6m)	≥	-0.0970	10.13	9.47%	60	77.25%	40.11%	3.556	1.658
0.5233	5	7.55	0.0000	PRETAX_PM	≤	0.1034	8.30	7.76%	60	84.06%	40.82%	3.989	1.797
0.5667	6	6.71	0.0000	DY	≤	0.0325	4.08	3.82%	38	120.53%	57.36%	4.050	1.917
0.61	7	6.62	0.0000	CH_TA	≤	0.3215	3.67	3.43%	38	123.72%	58.20%	4.084	1.944
0.6533	8	6.49	0.0000	ROE(-12m)	≥	-0.1618	2.78	2.60%	36	138.15%	62.26%	4.381	2.054
0.6967	9	6.28	0.0000	POS_OP	≥	8.0000	2.58	2.41%	35	137.06%	62.31%	4.244	2.035
0.74	10	5.96	0.0000	MOM_6(-3m)	≥	-0.1964	2.57	2.40%	34	137.16%	68.25%	3.492	1.859
0.7833	11	5.70	0.0000	CH_ARISALES	≤	-0.0562	2.05	1.92%	32	142.65%	102.91%	1.638	1.283
0.8267	12	5.46	0.0000	OPINCITA	≤	0.1216	1.83	1.71%	32	145.45%	103.12%	1.673	1.308
0.87	13	5.07	0.0000	CH_TA(-6m)	≤	0.1497	1.78	1.67%	30	148.71%	102.85%	1.734	1.342
0.9133	14	4.73	0.0000	ROE	≤	0.0828	1.73	1.62%	29	152.65%	103.25%	1.789	1.374
0.9567	15	4.27	0.0000	CH_INVTURN(-6m)	≥	-2.3977	1.17	1.09%	23	173.24%	105.47%	2.177	1.542
1	16	4.04	0.0001	MOM_3(-6m)	≥	-0.1638	1.17	1.09%	22	176.08%	105.51%	2.218	1.569
1	17	3.97	0.0001	MOM_3(-9m)	≥	-0.2131	1.17	1.09%	21	180.88%	105.37%	2.317	1.616
1	18	3.68	0.0001	CH_ASSTURN	≥	0.0337	0.92	0.86%	18	190.09%	120.41%	1.934	1.491
1	19	3.31	0.0005	CH_SALES(-9m)	≥	-0.2144	0.87	0.81%	15	164.09%	121.10%	1.407	1.264
1	20	3.18	0.0008	NOSHARES	≤	81392	0.67	0.62%	14	139.22%	61.32%	3.903	2.068
1	21	3.08	0.0011	EY(-12m)	≥	-0.0335	0.62	0.58%	13	144.29%	59.47%	4.403	2.234
1	22	2.94	0.0017	DY(-12m)	≥	0.0413	0.62	0.58%	12	145.62%	59.47%	4.430	2.255
1	23	2.45	0.0072	ROA	≤	0.0122	0.57	0.53%	9	133.44%	61.43%	3.445	1.991
1	24	1.77	0.0380	MOM_6(-6m)	≥	-0.0968	0.52	0.48%	6	124.42%	61.43%	2.959	1.847
1	25	0.27	0.3947	EARNG_24(-12m)	≥	-0.1674	0.42	0.39%	2	103.12%	64.87%	1.801	1.425

No	2000			2001			2002			2003			2004		
1	11.66%	1097%	1129	66.01%	13602%	2967	67.26%	12914%	2304	81.05%	12758%	1889	48%	3584%	903
2	28.64%	930%	391	70.85%	10126%	1715	75.77%	9042%	1432	91.51%	8007%	1050	61%	2425%	476
3	40.56%	1014%	300	67.45%	7340%	1306	83.48%	8515%	1224	86.84%	5927%	819	76%	2504%	395
4	53.04%	1012%	229	71.25%	6359%	1071	87.38%	6859%	942	68.00%	3502%	618	104%	2662%	308
5	63.64%	927%	175	73.94%	5010%	813	97.49%	6247%	769	71.75%	3157%	528	112%	2649%	283
6	130.61%	696%	64	77.30%	1205%	187	129.13%	3002%	279	109.28%	1931%	212	168%	2207%	158
7	143.75%	659%	55	81.41%	1106%	163	130.70%	3006%	276	109.28%	1931%	212	168%	2207%	158
8	143.75%	659%	55	91.48%	1014%	133	164.35%	2054%	150	123.90%	1941%	188	168%	2207%	158
9	143.75%	659%	55	91.48%	1014%	133	164.35%	2054%	150	118.40%	1766%	179	169%	2182%	155
10	143.75%	659%	55	93.19%	1002%	129	157.54%	1864%	142	119.65%	1763%	177	175%	2119%	145
11	143.75%	659%	55	91.66%	962%	126	143.05%	1585%	133	129.51%	1630%	151	238%	1725%	87
12	143.75%	659%	55	91.66%	962%	126	143.05%	1585%	133	131.97%	1430%	130	252%	1763%	84
13	143.75%	659%	55	91.66%	962%	126	143.05%	1585%	133	128.10%	1228%	115	317%	1663%	63
14	143.75%	659%	55	93.90%	728%	93	140.65%	1524%	130	128.10%	1228%	115	317%	1663%	63
15	146.31%	415%	34	130.10%	455%	42	147.18%	1300%	106	104.16%	634%	73	358%	1701%	57
16	146.31%	415%	34	130.10%	455%	42	147.18%	1300%	106	107.48%	555%	62	359%	1677%	56
17	140.06%	292%	25	132.24%	430%	39	147.18%	1300%	106	103.01%	464%	54	387%	1675%	52
18	0.00%	0%	0	155.62%	363%	28	147.18%	1300%	106	103.01%	464%	54	387%	1675%	52
19	0.00%	0%	0	155.62%	363%	28	147.18%	1300%	106	115.88%	464%	48	361%	663%	22
20	0.00%	0%	0	155.62%	363%	28	147.18%	1300%	106	115.88%	464%	48	121%	101%	10
21	0.00%	0%	0	155.62%	363%	28	147.18%	1300%	106	106.67%	284%	32	434%	72%	2
22	0.00%	0%	0	152.93%	293%	23	150.68%	1243%	99	106.67%	284%	32	434%	72%	2
23	0.00%	0%	0	152.93%	293%	23	130.18%	781%	72	98.05%	188%	23	434%	72%	2
24	0.00%	0%	0	148.19%	272%	22	122.88%	512%	50	87.29%	87%	12	0%	0%	0
25	0.00%	0%	0	113.46%	123%	13	108.16%	99%	11	87.29%	87%	12	0%	0%	0

Appendix D.10.C Results for dynamic comparison level tests: restricted sample

Continued: Length = fifteen filters; Initial comparison level = 40 and 45 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.4	1	5.33	0.0000	MTB	≤ 0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.44	2	7.84	0.0000	CH_TA(-12m)	≤ 0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.48	3	7.83	0.0000	DY	≤ 0.0277	7.90	7.38%	75	103.14%	42.27%	5.756	2.188
0.52	4	8.06	0.0000	ROA(-12m)	≥ -0.1173	6.83	6.39%	67	102.92%	29.13%	11.869	3.162
0.56	5	8.21	0.0000	POS_ROE	≥ 15.0000	5.02	4.69%	59	113.08%	29.53%	13.701	3.458
0.6	6	8.18	0.0000	ROA	≤ 0.1331	4.70	4.39%	59	117.90%	30.73%	13.539	3.484
0.64	7	7.93	0.0000	ROE(-12m)	≥ -0.1618	3.83	3.58%	58	126.62%	35.61%	11.446	3.253
0.68	8	7.75	0.0000	CH_TA(-6m)	≤ 0.2556	3.75	3.50%	58	127.26%	35.39%	11.541	3.292
0.72	9	7.39	0.0000	CH_TA	≤ 0.2654	3.53	3.30%	58	128.26%	35.76%	11.318	3.285
0.76	10	6.94	0.0000	ROE(-9m)	≥ -0.0748	3.27	3.05%	56	132.15%	38.09%	10.433	3.185
0.8	11	6.40	0.0000	OPINCITA	≤ 0.1633	3.23	3.02%	54	131.03%	38.44%	9.934	3.126
0.84	12	5.91	0.0000	PRETAX_PM	≤ 0.0686	2.85	2.66%	47	135.40%	39.26%	10.022	3.175
0.88	13	5.57	0.0000	CH_ASSTURN(-6m)	≥ -0.2930	2.45	2.29%	43	145.35%	40.73%	10.574	3.313
0.92	14	5.43	0.0000	CH_INVTURN(-12m)	≥ -2.3977	1.67	1.56%	37	160.40%	49.37%	8.642	3.035
0.96	15	5.09	0.0000	EY(-12m)	≥ -0.0335	1.57	1.46%	34	169.84%	47.66%	10.257	3.338
1	16	4.92	0.0000	NOSHARES	≤ 49060	1.33	1.25%	32	175.60%	47.84%	10.739	3.446
1	17	4.67	0.0000	ROE	≤ -0.0036	1.28	1.20%	29	174.60%	46.34%	11.171	3.540
1	18	4.39	0.0000	POS_OP	≥ 16.0000	1.23	1.15%	26	167.78%	46.16%	10.260	3.405
1	19	4.09	0.0000	EY(-9m)	≥ 0.1346	1.18	1.11%	23	159.76%	48.51%	8.317	3.074
1	20	3.76	0.0001	SALESICASH	≥ -28.0377	0.95	0.89%	20	159.12%	52.39%	6.986	2.833
1	21	3.27	0.0006	CH_DPS(-12m)	≥ -0.5693	0.83	0.78%	15	133.89%	58.19%	3.960	2.116
1	22	3.13	0.0009	MOM_3(-6m)	≥ -0.0962	0.82	0.76%	14	130.29%	58.43%	3.675	2.047
1	23	2.98	0.0015	MOM_6(-6m)	≥ -0.3419	0.80	0.75%	13	126.96%	55.91%	3.766	2.079
1	24	2.82	0.0024	CH_ARISALES	≤ -0.0592	0.60	0.56%	12	125.33%	55.50%	3.680	2.054
1	25	2.66	0.0040	MOM_3(-9m)	≥ -0.2131	0.60	0.56%	11	123.57%	55.50%	3.536	2.032
1	26	2.47	0.0068	DY(-9m)	≥ 0.0439	0.60	0.56%	10	123.52%	55.50%	3.493	2.031
1	27	2.27	0.0117	DY(-12m)	≥ 0.0413	0.60	0.56%	9	123.21%	55.50%	3.436	2.025
1	28	2.01	0.0220	CH_INVISALES(-9m)	≤ -0.1123	0.57	0.53%	7	122.12%	56.80%	3.186	1.963
1	29	1.75	0.0401	MOM_6(-3m)	≥ -0.0912	0.55	0.51%	6	118.83%	57.60%	2.901	1.880
1	30	1.05	0.1473	SDEV_VOL(-12m)	≥ -1.2656	0.48	0.45%	4	108.57%	58.62%	2.313	1.673
1	31	0.91	0.1807	SDEV_VOL(-6m)	≥ -0.9470	0.28	0.26%	3	111.40%	37.56%	5.866	2.684

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**48%**	*3584%*	*903*
2	**28.54%**	*930%*	*391*	**70.85%**	*10126%*	*1715*	**75.77%**	*9042%*	*1432*	**91.51%**	*8007%*	*1050*	**61%**	*2425%*	*476*
3	**75.94%**	*721%*	*114*	**94.72%**	*4452%*	*564*	**97.90%**	*4887%*	*599*	**140.37%**	*5989%*	*512*	**77%**	*2001%*	*311*
4	**79.42%**	*721%*	*109*	**110.38%**	*4489%*	*488*	**100.63%**	*4621%*	*551*	**129.85%**	*4967%*	*459*	**44%**	*744%*	*205*
5	**94.68%**	*717%*	*91*	**126.61%**	*3827%*	*363*	**111.79%**	*4118%*	*442*	**114.03%**	*3734%*	*393*	**92%**	*1061%*	*139*
6	**94.68%**	*717%*	*91*	**126.61%**	*3827%*	*363*	**126.49%**	*4027%*	*382*	**116.14%**	*3455%*	*357*	**92%**	*1061%*	*139*
7	**112.06%**	*654%*	*70*	**143.15%**	*3471%*	*291*	**136.48%**	*3398%*	*301*	**121.96%**	*3445%*	*339*	**92%**	*1061%*	*139*
8	**112.06%**	*654%*	*70*	**148.41%**	*3463%*	*280*	**133.61%**	*3340%*	*300*	**121.96%**	*3445%*	*339*	**92%**	*1061%*	*139*
9	**121.27%**	*616%*	*61*	**151.13%**	*3337%*	*265*	**133.61%**	*3340%*	*300*	**121.96%**	*3445%*	*339*	**92%**	*1061%*	*139*
10	**119.25%**	*547%*	*55*	**173.48%**	*2920%*	*202*	**132.47%**	*3279%*	*297*	**125.37%**	*3427%*	*328*	**92%**	*1061%*	*138*
11	**119.25%**	*547%*	*55*	**173.48%**	*2920%*	*202*	**132.47%**	*3279%*	*297*	**122.82%**	*3244%*	*317*	**85%**	*886%*	*125*
12	**119.25%**	*547%*	*55*	**173.48%**	*2920%*	*202*	**144.66%**	*3327%*	*276*	**124.80%**	*2174%*	*209*	**70%**	*646%*	*110*
13	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**182.60%**	*2783%*	*183*	**123.66%**	*1566%*	*152*	**70%**	*646%*	*110*
14	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**122.31%**	*836%*	*82*	**76%**	*227%*	*36*
15	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**101.26%**	*363%*	*43*	**385%**	*96%*	*3*
16	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**181.14%**	*151%*	*10*	**0%**	*0%*	*0*
17	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0%**	*0%*	*0*
18	**144.23%**	*589%*	*49*	**153.60%**	*2125%*	*166*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0%**	*0%*	*0*
19	**144.23%**	*589%*	*49*	**130.77%**	*1449%*	*133*	**191.71%**	*2061%*	*129*	**652.98%**	*54%*	*1*	**0%**	*0%*	*0*
20	**144.23%**	*589%*	*49*	**111.23%**	*1010%*	*109*	**205.74%**	*2006%*	*117*	**652.98%**	*54%*	*1*	**0%**	*0%*	*0*
21	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.88%**	*1007%*	*84*	**652.98%**	*54%*	*1*	**0%**	*0%*	*0*
22	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.03%**	*870%*	*73*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
23	**149.07%**	*559%*	*45*	**105.53%**	*572%*	*65*	**132.70%**	*774%*	*70*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
24	**149.07%**	*559%*	*45*	**107.93%**	*495%*	*55*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
25	**145.43%**	*436%*	*36*	**108.26%**	*469%*	*52*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
26	**145.43%**	*436%*	*36*	**100.32%**	*401%*	*48*	**128.94%**	*645%*	*60*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
27	**145.43%**	*436%*	*36*	**92.46%**	*331%*	*43*	**133.07%**	*588%*	*53*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
28	**145.43%**	*436%*	*36*	**88.53%**	*310%*	*42*	**141.16%**	*353%*	*30*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
29	**145.43%**	*436%*	*36*	**86.52%**	*288%*	*40*	**135.57%**	*226%*	*20*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
30	**145.43%**	*436%*	*36*	**65.59%**	*169%*	*31*	**109.63%**	*46%*	*5*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
31	**146.01%**	*365%*	*30*	**53.72%**	*81%*	*18*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.45	1	2.89	0.0019	MTB	≤ 0.6700	24.95	23.32%	146	57.38%	25.21%	5.402	1.851
0.4867	2	6.10	0.0000	CH_TA(-12m)	≤ 0.2059	16.63	15.55%	98	72.35%	33.21%	4.748	1.855
0.5233	3	7.24	0.0000	DY	≤ 0.0277	7.90	7.38%	75	103.14%	42.27%	5.756	2.188
0.56	4	7.53	0.0000	ROA(-12m)	≥ -0.1173	6.83	6.39%	67	102.92%	29.13%	11.869	3.162
0.5967	5	8.02	0.0000	POS_NET	≥ 16.0000	4.32	4.03%	56	120.52%	33.63%	11.974	3.259
0.6333	6	7.81	0.0000	CH_TA(-6m)	≤ 0.2556	4.23	3.96%	56	121.06%	33.38%	12.085	3.300
0.67	7	7.62	0.0000	ROE(-12m)	≥ -0.1618	3.72	3.47%	55	125.74%	35.74%	11.204	3.216
0.7067	8	7.31	0.0000	CH_TA	≤ 0.2654	3.50	3.27%	55	126.74%	36.10%	10.992	3.210
0.7433	9	6.91	0.0000	OPINCITA	≤ 0.1216	3.12	2.91%	49	130.52%	36.96%	10.953	3.241
0.78	10	6.55	0.0000	ROE(-9m)	≥ -0.0748	2.85	2.66%	47	135.40%	39.26%	10.301	3.175
0.8167	11	6.02	0.0000	CH_ASSTURN(-6m)	≥ -0.2930	2.45	2.29%	43	145.35%	40.73%	10.863	3.313
0.8533	12	5.66	0.0000	PRETAX_PM	≤ 0.0338	2.22	2.07%	41	148.71%	41.51%	10.511	3.287
0.89	13	5.55	0.0000	ROA	≤ 0.0122	1.85	1.73%	37	157.22%	44.64%	10.290	3.289
0.9267	14	5.19	0.0000	EY(-12m)	≥ -0.0335	1.75	1.64%	34	166.15%	41.24%	13.282	3.772
0.9633	15	4.99	0.0000	CAPGEAR	≥ 0.0269	1.52	1.42%	32	171.59%	42.56%	13.126	3.784
1	16	4.67	0.0000	NOSHARES	≤ 49060	1.28	1.20%	29	174.60%	46.34%	11.314	3.540
1	17	4.39	0.0000	POS_OP	≥ 16.0000	1.23	1.15%	26	167.78%	46.16%	10.389	3.405
1	18	4.09	0.0000	EY(-9m)	≥ 0.1346	1.18	1.11%	23	159.76%	48.51%	8.421	3.074
1	19	3.76	0.0001	SALESICASH	≥ -28.0377	0.95	0.89%	20	159.12%	52.39%	7.073	2.833
1	20	3.27	0.0006	CH_DPS(-12m)	≥ -0.5693	0.83	0.78%	15	133.89%	58.19%	4.008	2.116
1	21	3.13	0.0009	MOM_3(-6m)	≥ -0.0962	0.82	0.76%	14	130.29%	58.43%	3.720	2.047
1	22	2.98	0.0015	MOM_6(-6m)	≥ -0.3419	0.80	0.75%	13	126.96%	55.91%	3.811	2.079
1	23	2.82	0.0024	CH_ARISALES	≤ -0.0592	0.60	0.56%	12	125.33%	55.50%	3.724	2.064
1	24	2.66	0.0040	MOM_3(-9m)	≥ -0.2131	0.60	0.56%	11	123.57%	55.50%	3.577	2.032
1	25	2.47	0.0068	DY(-9m)	≥ 0.0439	0.60	0.56%	10	123.52%	55.50%	3.533	2.031
1	26	2.27	0.0117	DY(-12m)	≥ 0.0413	0.60	0.56%	9	123.21%	55.50%	3.475	2.025
1	27	2.01	0.0220	CH_INVISALES(-9m)	≤ -0.1123	0.57	0.53%	7	122.12%	56.80%	3.222	1.963
1	28	1.75	0.0401	MOM_6(-3m)	≥ -0.0912	0.55	0.51%	6	118.83%	57.60%	2.933	1.880
1	29	1.05	0.1473	SDEV_VOL(-12m)	≥ -1.2656	0.48	0.45%	4	108.57%	58.62%	2.338	1.673
1	30	0.91	0.1807	SDEV_VOL(-6m)	≥ -0.9470	0.28	0.26%	3	111.40%	37.56%	5.930	2.684

No	2000			2001			2002			2003			2004		
1	**11.66%**	*1097%*	*1129*	**55.01%**	*13602%*	*2967*	**67.26%**	*12914%*	*2304*	**81.05%**	*12758%*	*1889*	**48%**	*3584%*	*903*
2	**28.54%**	*930%*	*391*	**70.85%**	*10126%*	*1715*	**75.77%**	*9042%*	*1432*	**91.51%**	*8007%*	*1050*	**61%**	*2425%*	*476*
3	**75.94%**	*721%*	*114*	**94.72%**	*4452%*	*564*	**97.90%**	*4887%*	*599*	**140.37%**	*5989%*	*512*	**77%**	*2001%*	*311*
4	**79.42%**	*721%*	*109*	**110.38%**	*4489%*	*488*	**100.63%**	*4621%*	*551*	**129.85%**	*4967%*	*459*	**44%**	*744%*	*205*
5	**112.06%**	*654%*	*70*	**136.76%**	*3530%*	*312*	**127.97%**	*3978%*	*373*	**113.99%**	*3163%*	*333*	**82%**	*848%*	*124*
6	**112.06%**	*654%*	*70*	**140.39%**	*3521%*	*301*	**126.44%**	*3920%*	*372*	**113.99%**	*3163%*	*333*	**82%**	*848%*	*124*
7	**112.06%**	*654%*	*70*	**148.41%**	*3463%*	*280*	**133.61%**	*3340%*	*300*	**118.42%**	*3138%*	*318*	**82%**	*848%*	*124*
8	**121.27%**	*616%*	*61*	**151.13%**	*3337%*	*265*	**133.61%**	*3340%*	*300*	**118.42%**	*3138%*	*318*	**82%**	*848%*	*124*
9	**121.27%**	*616%*	*61*	**151.13%**	*3337%*	*265*	**145.76%**	*3389%*	*279*	**119.68%**	*2192%*	*220*	**70%**	*646%*	*111*
10	**119.25%**	*547%*	*55*	**173.48%**	*2920%*	*202*	**144.66%**	*3327%*	*276*	**124.80%**	*2174%*	*209*	**70%**	*646%*	*110*
11	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**182.60%**	*2783%*	*183*	**123.66%**	*1566%*	*152*	**70%**	*646%*	*110*
12	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**193.17%**	*2559%*	*159*	**122.44%**	*1428%*	*140*	**70%**	*646%*	*110*
13	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**139.26%**	*1195%*	*103*	**64%**	*189%*	*42*
14	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**135.44%**	*722%*	*64*	**78%**	*59%*	*9*
15	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**197.61%**	*511%*	*31*	**-75%**	*-38%*	*6*
16	**119.25%**	*547%*	*55*	**176.87%**	*2889%*	*196*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0%**	*0%*	*0*
17	**144.23%**	*589%*	*49*	**153.60%**	*2125%*	*166*	**190.67%**	*2097%*	*132*	**652.98%**	*54%*	*1*	**0%**	*0%*	*0*
18	**144.23%**	*589%*	*49*	**130.77%**	*1449%*	*133*	**191.71%**	*2061%*	*129*	**652.98%**	*54%*	*1*	**0%**	*0%*	*0*
19	**144.23%**	*589%*	*49*	**111.23%**	*1010%*	*109*	**205.74%**	*2006%*	*117*	**652.98%**	*54%*	*1*	**0%**	*0%*	*0*
20	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.88%**	*1007%*	*84*	**652.98%**	*54%*	*1*	**0%**	*0%*	*0*
21	**149.07%**	*559%*	*45*	**106.31%**	*656%*	*74*	**143.03%**	*870%*	*73*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
22	**149.07%**	*559%*	*45*	**105.53%**	*572%*	*65*	**132.70%**	*774%*	*70*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
23	**149.07%**	*559%*	*45*	**107.93%**	*495%*	*55*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
24	**145.43%**	*436%*	*36*	**108.26%**	*469%*	*52*	**123.70%**	*701%*	*68*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
25	**145.43%**	*436%*	*36*	**100.32%**	*401%*	*48*	**128.94%**	*645%*	*60*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
26	**145.43%**	*436%*	*36*	**92.46%**	*331%*	*43*	**133.07%**	*588%*	*53*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
27	**145.43%**	*436%*	*36*	**88.53%**	*310%*	*42*	**141.16%**	*353%*	*30*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
28	**145.43%**	*436%*	*36*	**86.52%**	*288%*	*40*	**135.57%**	*226%*	*20*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
29	**145.43%**	*436%*	*36*	**65.59%**	*169%*	*31*	**109.63%**	*46%*	*5*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
30	**146.01%**	*365%*	*30*	**53.72%**	*81%*	*18*	**0.00%**	*0%*	*0*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*

Appendix D.10.C Results for dynamic comparison level tests: restricted sample

Continued: Length = fifteen filters; Initial comparison level = 50 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.5	1	1.39	0.0830	OPINCITA	≤	-0.0455	7.35	6.87%	87	76.31%	57.14%	1.793	1.150
0.5333	2	4.59	0.0000	POS_NET	≥	18.0000	4.12	3.85%	68	118.59%	93.35%	1.581	1.157
0.5667	3	5.92	0.0000	CH_TA(-9m)	≤	0.3757	3.42	3.19%	65	146.64%	105.32%	1.866	1.291
0.6	4	6.17	0.0000	CH_INVTURN(-6m)	≥	-2.3977	3.10	2.90%	64	163.67%	120.83%	1.737	1.267
0.6333	5	6.08	0.0000	DY	≤	0.0036	2.85	2.66%	64	168.73%	125.10%	1.696	1.265
0.6667	6	5.93	0.0000	CH_DEP	≤	0.5228	2.75	2.57%	62	175.59%	120.40%	1.952	1.371
0.7	7	5.86	0.0000	NOSHARES	≤	162222	2.17	2.02%	55	189.44%	151.66%	1.410	1.179
0.7333	8	5.74	0.0000	CH_ASSTURN	≥	-0.1652	2.17	2.02%	50	205.01%	142.72%	1.837	1.363
0.7667	9	5.58	0.0000	ACCITA	≤	0.0654	2.15	2.01%	49	205.97%	139.44%	1.915	1.402
0.8	10	5.47	0.0000	MTB	≤	3.6700	1.87	1.74%	40	240.18%	127.15%	3.084	1.810
0.8333	11	5.32	0.0000	PRETAX_PM	≤	-0.1054	1.63	1.53%	37	247.42%	129.59%	3.106	1.832
0.8667	12	5.21	0.0000	CH_INVITA(-12m)	≥	-0.0248	1.62	1.51%	36	247.77%	125.91%	3.255	1.889
0.9	13	4.98	0.0000	CH_ASSTURN(-6m)	≥	-0.2930	1.35	1.26%	33	260.55%	125.05%	3.599	2.002
0.9333	14	4.68	0.0000	CH_TA(-12m)	≤	0.2605	1.30	1.21%	30	248.97%	127.25%	3.131	1.877
0.9667	15	4.30	0.0000	SALESICASH	≥	5.4257	1.05	0.98%	26	229.70%	86.59%	5.679	2.532
1	16	3.76	0.0001	SDEV_VOL	≥	-0.4409	0.87	0.81%	18	252.95%	56.51%	15.952	4.289
1	17	3.66	0.0002	CH_INVITA	≥	-0.0250	0.67	0.62%	17	258.74%	60.97%	14.155	4.070
1	18	3.55	0.0002	EY(-12m)	≥	-0.0335	0.65	0.61%	16	246.79%	62.03%	12.283	3.808
1	19	3.20	0.0007	EY(-9m)	≥	0.0034	0.60	0.56%	13	216.64%	72.02%	6.934	2.860
1	20	3.07	0.0011	SDEV_VOL(-9m)	≥	0.2307	0.58	0.55%	12	217.15%	78.98%	5.721	2.613
1	21	2.94	0.0017	CAPGEAR	≥	0.4461	0.38	0.36%	11	220.11%	93.91%	4.107	2.229
1	22	2.80	0.0026	SDEV_VOL(-12m)	≥	0.2594	0.38	0.36%	10	225.06%	93.91%	4.242	2.281
1	23	2.65	0.0040	EARNG_24(-12m)	≥	-0.1674	0.37	0.34%	9	232.56%	95.43%	4.335	2.323
1	24	2.11	0.0173	SDEV_VOL(-6m)	≥	0.3231	0.32	0.30%	6	236.44%	100.72%	3.975	2.243
1	25	0.80	0.2114	MOM_3(-9m)	≥	-0.2761	0.28	0.26%	2	184.79%	89.40%	3.045	1.949

No	2000			2001			2002			2003			2004		
1	**4.32%**	*128%*	*356*	**42.93%**	*3706%*	*1036*	**142.56%**	*9491%*	*799*	**81.06%**	*4614%*	*683*	**86%**	*3121%*	*438*
2	**-18.60%**	*-229%*	*148*	**83.69%**	*4010%*	*575*	**214.84%**	*8271%*	*462*	**98.83%**	*2965%*	*360*	**132%**	*2535%*	*231*
3	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**207.26%**	*7668%*	*444*	**98.83%**	*2965%*	*360*	**141%**	*2580%*	*219*
4	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**227.61%**	*7568%*	*399*	**126.36%**	*2369%*	*225*	**161%**	*2158%*	*171*
5	**54.02%**	*167%*	*37*	**131.78%**	*3778%*	*344*	**232.68%**	*7539%*	*389*	**142.38%**	*2219%*	*187*	**161%**	*2158%*	*171*
6	**27.64%**	*34%*	*15*	**144.27%**	*3547%*	*295*	**231.77%**	*7494%*	*388*	**142.38%**	*2219%*	*187*	**161%**	*2158%*	*171*
7	**27.64%**	*34%*	*15*	**164.70%**	*3610%*	*280*	**253.33%**	*7030%*	*333*	**204.14%**	*2586%*	*152*	**95%**	*949%*	*120*
8	**27.64%**	*34%*	*15*	**164.70%**	*3610%*	*280*	**266.28%**	*7030%*	*318*	**309.18%**	*1288%*	*50*	**132%**	*1159%*	*105*
9	**27.64%**	*34%*	*15*	**164.70%**	*3610%*	*280*	**265.28%**	*7030%*	*318*	**296.87%**	*1089%*	*44*	**147%**	*1214%*	*99*
10	**27.64%**	*34%*	*15*	**154.68%**	*3403%*	*264*	**387.44%**	*5295%*	*164*	**592.10%**	*1086%*	*22*	**170%**	*1230%*	*87*
11	**27.64%**	*34%*	*15*	**161.11%**	*3222%*	*240*	**399.98%**	*5066%*	*152*	**592.10%**	*1086%*	*22*	**170%**	*1230%*	*87*
12	**27.64%**	*34%*	*15*	**161.17%**	*3156%*	*235*	**405.50%**	*4900%*	*145*	**592.10%**	*1086%*	*22*	**170%**	*1230%*	*87*
13	**27.64%**	*34%*	*15*	**161.17%**	*3156%*	*235*	**405.50%**	*4900%*	*145*	**-41.58%**	*-24%*	*7*	**450%**	*1574%*	*42*
14	**27.64%**	*34%*	*15*	**152.09%**	*2788%*	*220*	**396.04%**	*4092%*	*124*	**-41.58%**	*-24%*	*7*	**450%**	*1574%*	*42*
15	**27.64%**	*34%*	*15*	**152.09%**	*2788%*	*220*	**396.04%**	*4092%*	*124*	**-291.03%**	*-24%*	*1*	**0%**	*0%*	*0*
16	**0.00%**	*0%*	*2*	**136.99%**	*1393%*	*122*	**400.50%**	*3438%*	*103*	**-291.03%**	*-24%*	*1*	**0%**	*0%*	*0*
17	**0.00%**	*0%*	*0*	**133.28%**	*1244%*	*112*	**400.50%**	*3438%*	*103*	**-291.03%**	*-24%*	*1*	**0%**	*0%*	*0*
18	**0.00%**	*0%*	*0*	**131.89%**	*1154%*	*105*	**376.39%**	*3066%*	*98*	**-291.03%**	*-24%*	*1*	**0%**	*0%*	*0*
19	**0.00%**	*0%*	*0*	**124.22%**	*807%*	*78*	**303.36%**	*2250%*	*89*	**-291.03%**	*-24%*	*1*	**0%**	*0%*	*0*
20	**0.00%**	*0%*	*0*	**116.60%**	*645%*	*67*	**300.24%**	*2202%*	*88*	**-291.03%**	*-24%*	*1*	**0%**	*0%*	*0*
21	**0.00%**	*0%*	*0*	**101.19%**	*464%*	*55*	**300.24%**	*2202%*	*88*	**-291.03%**	*-24%*	*1*	**0%**	*0%*	*0*
22	**0.00%**	*0%*	*0*	**100.81%**	*420%*	*50*	**308.13%**	*2080%*	*81*	**-291.03%**	*-24%*	*1*	**0%**	*0%*	*0*
23	**0.00%**	*0%*	*0*	**102.93%**	*343%*	*40*	**304.82%**	*2007%*	*79*	**-291.03%**	*-24%*	*1*	**0%**	*0%*	*0*
24	**0.00%**	*0%*	*0*	**104.18%**	*339%*	*39*	**351.06%**	*1316%*	*45*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*
25	**0.00%**	*0%*	*0*	**37.99%**	*47%*	*15*	**289.66%**	*507%*	*21*	**0.00%**	*0%*	*0*	**0%**	*0%*	*0*

Appendix D.11. Summary of filters chosen

The table below shows each of the filter variables sorted by the frequency of their appearance within the first ten variables within each combination of filters. The table also lists all filter levels for each variable which are included in filter combinations in Chapter 6. In addition to listing all of these filters, the table shows the frequency with which each of the filters occurs. For evaluation purposes, the average marginal addition and the total addition to both the JK statistic and the Sharpe measure are shown. The highlighted cells indicate the greatest marginal and total additions to the corresponding evaluation metric for each variable.

Category	Variable Top 10 Frequency	Variable	≤ ≥	Filter level	Filter Frequency	JK Statistic: Average Marginal Addition	JK Statistic: Total Addition	Sharpe Ratio: Average Marginal Addition	Sharpe Ratio: Total Addition
Valuation	19	MTB	≤	0.6700	12	**5.40**	**64.82**	**1.85**	**22.22**
				1.1700	1	-0.85	-0.85	-0.09	-0.09
				1.6700	2	-0.33	-0.66	-0.01	-0.02
				2.1700	4	-0.56	-2.25	-0.04	-0.17
				3.1700	2	-0.80	-1.60	-0.06	-0.16
				3.6700	7	0.63	4.38	0.23	1.61
	13	EY(-12m)	≥	-0.0335	10	1.14	11.38	0.21	2.10
				0.0188	1	-0.31	-0.31	-0.01	-0.01
				0.0971	3	-0.15	-0.44	-0.01	-0.04
				0.1232	1	0.89	0.89	0.16	0.16
				0.1493	9	**9.39**	**84.48**	**2.14**	**19.25**
				0.1754	1	0.26	0.26	0.09	0.09
	8	EY(-9m)	≥	0.0034	4	-2.99	-11.98	-0.53	-2.10
				0.0596	2	0.24	0.49	0.06	0.12
				0.1158	5	**8.84**	**44.22**	**1.88**	**9.38**
				0.1348	11	-1.49	-16.37	-0.22	-2.45
				0.1720	2	-0.56	-1.12	-0.04	-0.07
Technical	9	NOSHARES	≤	49060	4	-0.68	-2.72	-0.07	-0.27
				65228	1	-2.50	-2.50	-0.34	-0.34
				81392	5	**4.53**	**22.66**	**0.87**	**4.33**
				97556	1	0.96	0.96	0.14	0.14
				146256	9	0.81	7.30	0.17	1.50
				162222	4	-0.53	-2.13	-0.16	-0.62
				178388	4	-1.23	-4.93	-0.11	-0.45
	7	MOM_6(-3m)	≥	-0.1964	5	0.64	3.22	0.09	0.47
				-0.1438	4	0.34	1.35	0.07	0.27
				-0.0912	10	0.04	0.43	-0.01	-0.10
				-0.0386	4	-0.69	-2.77	-0.04	-0.18
				0.0666	1	**0.79**	**0.79**	**0.14**	**0.14**
	4	MOM_6(-6m)	≥	-0.3419	14	0.06	0.83	0.03	0.38
				-0.1785	2	-0.42	-0.84	0.00	0.00
				-0.0968	1	-0.49	-0.49	-0.14	-0.14
				-0.0151	1	**1.67**	**1.67**	**0.20**	**0.20**
				0.0666	6	-0.36	-2.13	-0.01	-0.03
				0.3117	1	-0.09	-0.09	0.02	0.02
	3	MOM_3(-6m)	≥	-0.2988	7	-0.16	-1.13	0.00	0.00
				-0.2313	1	**0.73**	**0.73**	**0.12**	**0.12**
				-0.1638	1	0.04	0.04	0.03	0.03
				-0.0962	14	-0.64	-8.90	-0.09	-1.27
				-0.0287	1	0.27	0.27	0.07	0.07
				0.0388	1	-0.57	-0.57	-0.04	-0.04
	1	SDEV_VOL	≥	-0.4409	9	**1.76**	**15.85**	**0.36**	**3.27**
	1	SDEV_VOL(-12m)	≥	-1.2656	8	-0.47	-3.76	-0.14	-1.15
				0.2594	4	**0.90**	**3.60**	**0.19**	**0.76**
	1	MOM_3(-9m)	≥	-0.2761	10	-0.27	-2.70	-0.05	-0.52
				-0.2131	8	-0.12	-0.98	-0.02	-0.18
				-0.1501	6	0.01	0.05	0.04	0.22
				-0.0872	3	**1.45**	**4.36**	**0.23**	**0.68**
	0	SDEV_VOL(-6m)	≥	-0.9470	15	**1.34**	**20.16**	**0.34**	**5.14**
				0.3231	4	-0.52	-2.09	-0.14	-0.56
	0	SDEV_VOL(-9m)	≥	-1.4093	8	-0.37	-2.95	-0.12	-0.93
				0.2307	2	-1.22	-2.44	-0.25	-0.49
Profitability	12	OPINCITA	≤	-0.0455	4	**1.79**	**7.17**	**1.15**	**4.60**
				0.0380	3	0.51	1.54	0.11	0.33
				0.0798	1	-0.17	-0.17	0.01	0.01
				0.1216	4	-0.05	-0.19	0.03	0.10
				0.1633	4	0.58	2.30	0.08	0.30
				0.2469	1	-0.07	-0.07	0.00	0.00
				0.2886	5	-0.21	-1.05	0.00	-0.02
	12	PRETAX_PM	≤	-0.1054	2	-0.01	-0.02	0.01	0.01
				-0.0358	2	-0.15	-0.31	-0.02	-0.05
				-0.0010	5	-1.43	-7.16	-0.24	-1.20
				0.0338	1	-0.35	-0.35	-0.03	-0.03
				0.0686	1	**0.09**	**0.09**	**0.05**	**0.05**
				0.1034	7	-1.43	-10.01	-0.10	-0.73
				0.1730	3	-0.13	-0.38	0.03	0.08
				0.2078	3	-0.23	-0.68	-0.01	-0.03
	6	CH_EBTISALES(-12m)	≥	-0.7558	5	**0.81**	**4.05**	**0.13**	**0.64**
				-0.6120	2	-0.40	-0.79	-0.01	-0.02
				-0.4683	1	0.75	0.75	**0.16**	0.16
				-0.3246	1	-4.36	-4.36	-0.39	-0.39
				0.2504	1	-10.16	-10.16	-1.40	-1.40
	4	CH_SALES(-9m)	≥	-0.2144	3	-0.33	-0.99	-0.07	-0.21
				-0.1429	3	-0.07	-0.22	0.01	0.04
				-0.0714	2	-0.31	-0.62	-0.03	-0.07
				0.0001	1	0.11	0.11	0.05	0.05
				0.0716	3	**1.67**	**5.01**	**0.28**	**0.84**
	3	CH_SALES(-12m)	≥	-0.2144	2	-0.37	-0.75	-0.01	-0.02
				-0.1429	1	-0.82	-0.82	-0.07	-0.07
				-0.0714	3	-0.41	-1.23	-0.02	-0.05
				0.0716	1	-1.07	-1.07	-0.28	-0.28
				0.1431	1	-0.34	-0.34	-0.06	-0.06
	3	OPINCITA(-12m)	≥	-0.0148	2	-0.41	-0.82	-0.05	-0.10
				0.0168	3	-0.26	-0.78	-0.03	-0.09
				0.0483	2	0.09	0.17	0.07	0.15
				0.2059	1	**0.71**	**0.71**	**0.37**	**0.37**
	1	GM	≥	-0.0622	2	**0.92**	**1.83**	**0.27**	**0.54**
	0	SALESTOCASH	≥	-28.0377	11	-0.83	-9.11	-0.10	-1.14
				5.4257	3	**2.06**	**6.18**	**0.54**	**1.63**
				13.7918	1	-2.21	-2.21	-0.55	-0.55
	0	GM(-12m)	≥	-0.0622	6	-1.22	-7.33	-0.34	-2.03

Appendix D.11. Summary of filters chosen

Continued.

Category	Variable Top 10 Frequency	Variable	≥	Filter level	Filter Frequency	JK Statistic		Sharpe Ratio	
						Average Marginal Addition	Total Addition	Average Marginal Addition	Total Addition
Performance	11	DY	≤	0.0036	3	-0.04	-0.12	0.00	-0.01
				0.0277	7	1.01	7.06	0.33	2.33
				0.0325	1	0.06	0.06	0.12	0.12
				0.0422	1	1.03	1.03	0.19	0.19
				0.0470	1	0.02	0.02	0.03	0.03
	10	ROA(-12m)	≥	-0.1173	6	5.65	33.88	0.91	5.43
				-0.0440	1	4.51	4.51	0.78	0.78
				-0.0074	2	-2.11	-4.22	-0.21	-0.42
				0.0293	1	0.00	0.00	0.03	0.03
				0.0659	2	-2.64	-5.27	-0.25	-0.51
	8	ROE(-9m)	≥	-0.0748	14	-0.32	-4.43	-0.02	-0.31
				0.1204	1	-0.31	-0.31	0.04	0.04
	5	EARNG_12	≥	-0.0153	5	2.67	13.33	0.39	1.97
				0.0248	2	7.58	15.16	0.98	1.97
				0.0315	3	3.70	11.11	0.60	1.79
	5	ROE	≤	-0.0036	4	0.45	1.80	0.09	0.38
				0.0828	1	0.05	0.05	0.03	0.03
				0.2124	1	-0.57	-0.57	-0.05	-0.05
				0.2556	3	4.07	12.22	0.57	1.70
				0.2988	1	-0.84	-0.84	-0.04	-0.04
				0.3420	5	-0.43	-2.15	-0.04	-0.18
				0.3852	3	-0.21	-0.64	-0.02	-0.05
	5	ROE(-12m)	≥	-0.1618	6	-0.74	-4.43	-0.07	-0.43
				-0.0956	2	-0.18	-0.37	0.01	0.02
				-0.0294	1	-0.99	-0.99	-0.08	-0.08
				0.0368	1	-0.10	-0.10	-0.01	-0.01
				0.1030	1	-0.67	-0.67	-0.04	-0.04
	2	ROA	≤	-0.0012	1	0.45	0.45	0.09	0.09
				0.0122	3	-0.31	-0.94	-0.05	-0.15
				0.1197	6	-0.60	-3.62	-0.07	-0.43
				0.1331	4	-0.24	-0.97	-0.01	-0.04
	1	DY(-12m)	≥	0.0044	5	-0.27	-1.34	-0.12	-0.60
				0.0229	3	0.27	0.82	0.08	0.23
				0.0413	6	-0.05	-0.40	0.00	-0.02
				0.0474	3	0.14	0.41	0.05	0.16
				0.0536	2	0.17	0.34	0.07	0.14
	1	EARNG_24(-9m)	≥	-0.1156	7	-1.14	-7.97	-0.22	-1.56
				-0.0858	3	-0.75	-2.25	-0.08	-0.24
				-0.0560	1	-0.85	-0.85	-0.22	-0.22
				0.0333	2	0.40	0.79	0.07	0.14
				0.0630	1	0.05	0.05	0.03	0.03
				0.1821	1	1.02	1.02	0.48	0.48
	0	EARNG_60	≤	0.1153	1	-0.07	-0.07	-0.02	-0.02
	0	GFORECAST_12	≤	2.0550	2	0.44	0.89	0.16	0.31
				4.4250	1	-0.49	-0.49	-0.15	-0.15
	0	REVISION_12	≤	0.0784	1	-1.47	-1.47	-0.23	-0.23
				0.2044	3	0.55	1.66	0.16	0.47
	0	REVISION_24	≤	0.1064	1	0.07	0.07	0.03	0.03
				0.3213	2	-0.31	-0.62	-0.10	-0.19
				0.4288	3	-2.71	-8.12	-0.76	-2.28
	0	CH_DPS(-12m)	≥	-0.5893	17	-1.56	-26.52	-0.31	-5.19
				-0.4221	1	1.17	1.17	0.22	0.22
				0.0195	1	-1.09	-1.09	-0.17	-0.17
	0	EARNG_24(-12m)	≥	-0.1674	11	-0.33	-3.65	-0.03	-0.31
				-0.0871	2	-1.06	-2.12	-0.12	-0.25
				-0.0470	1	-0.39	-0.39	-0.04	-0.04
				0.0333	1	0.85	0.85	0.18	0.18
				0.2339	1	-0.39	-0.39	-0.21	-0.21
	0	CH_DPS(-9m)	≥	-0.4286	5	-0.25	-1.25	-0.04	-0.18
				0.4048	1	-1.97	-1.97	-0.18	-0.18
	0	DY(-9m)	≥	0.0018	5	-1.12	-5.60	-0.20	-1.00
				0.0229	1	-0.02	-0.02	0.02	0.02
				0.0439	12	-0.05	-0.62	0.01	0.10
				0.0509	2	-0.45	-0.89	-0.02	-0.05
Leverage	0	CAPGEAR	≥	0.0269	9	-1.51	-13.57	-0.20	-1.82
				0.1317	1	0.17	0.17	0.06	0.06
				0.4461	2	-1.62	-3.25	-0.38	-0.77
				0.6557	1	-2.20	-2.20	-0.48	-0.48
Liquidity	0	CH_QUICK	≤	0.0110	3	0.60	1.80	0.01	0.03
				0.0989	4	-0.13	-0.51	-0.12	-0.47

Appendix D.11. Summary of filters chosen

Continued.

Category	Variable Top 10 Frequency	Variable	±	Filter level	Filter Frequency	JK Statistic		Sharpe Ratio	
						Average Marginal Addition	Total Addition	Average Marginal Addition	Total Addition
Efficiency	15	CH_TA(-12m)	≤	0.0968	1	0.45	0.45	0.34	0.34
				0.1513	1	2.89	2.89	0.36	0.36
				0.2059	11	-0.65	-7.19	0.00	0.04
				0.2605	5	-0.45	-2.24	-0.09	-0.44
				0.3696	3	0.30	0.89	0.10	0.29
	13	CH_DEP	≤	0.1099	1	5.61	5.61	0.72	0.72
				0.2475	2	-0.45	-0.89	0.00	0.00
				0.3852	6	2.81	16.84	0.38	2.28
				0.5228	7	0.50	3.49	0.13	0.88
	12	CH_ARISALES	≤	-0.0592	8	-0.31	-2.50	-0.09	-0.68
				0.0165	3	4.02	12.07	0.74	2.23
				0.0922	8	4.06	32.48	0.68	5.43
				0.2437	3	-0.21	-0.62	-0.02	-0.05
				0.3194	1	2.06	2.06	0.38	0.38
	8	CH_ASSTURN(-6m)	≥	-0.2930	9	0.16	1.43	0.08	0.68
				-0.0970	5	0.29	1.45	0.05	0.26
				-0.0316	5	-0.54	-2.71	-0.07	-0.35
	7	CH_TA	≤	-0.0716	1	-0.30	-0.30	-0.09	-0.09
				0.1530	1	5.46	5.46	0.67	0.67
				0.2654	3	-0.19	-0.58	0.00	-0.01
				0.3215	3	0.37	1.12	0.06	0.19
				0.3777	6	-0.09	-0.55	0.00	0.02
	7	CH_ASSTURN(-12m)	≥	-0.3121	3	-0.18	-0.55	0.00	-0.01
				-0.1046	9	-0.83	-7.51	-0.02	-0.15
	7	CH_TA(-6m)	≤	-0.1149	1	-1.73	-1.73	-0.57	-0.57
				0.0968	6	-1.56	-9.35	-0.23	-1.37
				0.1497	3	2.71	8.14	0.46	1.38
				0.2556	6	0.20	1.20	0.05	0.30
				0.3085	2	-0.06	-0.16	0.00	0.01
				0.3614	3	-0.69	-2.07	-0.08	-0.24
	7	CH_TA(-9m)	≤	0.0968	2	-2.56	-5.12	-0.37	-0.74
				0.1665	2	-0.28	-0.57	-0.03	-0.05
				0.2363	2	-0.17	-0.33	0.00	0.00
				0.3757	6	0.28	1.66	0.11	0.66
				0.4455	2	-0.06	-0.12	0.02	0.04
	6	CH_INVITA(-12m)	≥	-0.0248	12	-0.13	-1.52	0.05	0.63
	4	CH_ASSTURN	≥	-0.1652	6	0.00	0.01	0.07	0.39
				-0.1254	2	0.27	0.54	0.07	0.13
				-0.0061	2	0.06	0.11	0.03	0.06
				0.0337	1	-0.38	-0.38	-0.13	-0.13
	4	CH_INVTURN(-12m)	≥	-2.3977	9	-1.20	-10.76	-0.15	-1.34
				-0.7389	1	0.19	0.19	0.06	0.06
				-0.1859	1	-0.11	-0.11	-0.03	-0.03
	4	CH_INVTURN(-6m)	≥	-2.3977	10	-0.07	-0.74	0.00	0.04
				-1.2918	2	-1.05	-2.09	-0.24	-0.48
				-0.7389	2	-2.70	-5.41	-0.41	-0.81
				-0.1859	1	-0.05	-0.05	0.00	0.00
	3	ACCITA	≤	0.0194	2	0.24	0.49	0.06	0.15
				0.0654	3	1.07	3.21	0.11	0.33
				0.0884	2	4.81	9.61	0.59	1.17
	2	CH_INVSALES(-9m)	≤	-0.1123	7	-0.26	-1.84	-0.06	-0.43
				0.0949	4	-1.57	-6.30	-0.26	-1.04
				0.3021	6	0.39	2.33	0.12	0.69
	1	CH_INVITA	≥	-0.0250	3	-1.23	-3.68	-0.14	-0.43
				-0.0194	3	0.18	0.53	0.08	0.26
				-0.0139	2	-0.32	-0.63	-0.07	-0.14
				-0.0083	2	0.10	0.20	0.09	0.17
				0.0083	2	-4.64	-9.27	-0.85	-1.69
	1	NTC	≥	12.7478	6	0.06	0.29	0.01	0.06
				24.0407	1	-0.73	-0.73	-0.03	-0.03
	0	CH_DEP(-12m)	≤	0.3075	2	-0.55	-1.09	-0.05	-0.09
				0.3734	2	1.07	2.13	0.23	0.47
Position	13	POS_NET	≥	2.0000	2	0.04	0.07	0.04	0.07
				4.0000	2	0.10	0.20	0.07	0.13
				6.0000	1	-0.52	-0.52	-0.07	-0.07
				8.0000	1	-0.08	-0.08	-0.01	-0.01
				14.0000	4	-0.67	-2.68	-0.04	-0.16
				16.0000	5	0.11	0.54	0.08	0.39
				18.0000	4	-0.21	-0.86	0.01	0.03
				20.0000	3	-3.32	-9.96	-0.35	-1.04
	7	POS_OP	≥	-8.0000	1	-0.36	-0.36	-0.02	-0.02
				4.0000	4	0.12	0.46	0.06	0.22
				6.0000	6	-0.91	-5.43	-0.03	-0.19
				12.0000	1	-7.93	-7.93	-0.86	-0.86
				16.0000	8	-1.38	-11.04	-0.21	-1.65
				24.0000	1	0.04	0.04	0.03	0.03
	6	POS_ROE	≥	3.0000	6	-0.13	-0.78	0.01	0.06
				7.0000	1	-0.06	-0.06	0.03	0.03
				11.0000	1	-2.33	-2.33	-0.19	-0.19
				15.0000	2	1.16	2.32	0.21	0.41
				19.0000	3	-1.24	-3.73	-0.24	-0.71
				23.0000	1	0.52	0.52	0.10	0.10
	0	POS_NET(-12m)	≤	32.0000	4	-1.10	-4.42	-0.23	-0.94
	0	POS_OP(-12m)	≤	24.0000	2	-1.15	-2.30	-0.26	-0.51
				28.0000	3	-1.59	-4.76	-0.32	-0.97

Appendix D.12. Companies selected by final winner filter

The table below lists all companies selected by the final winner filter combination in Chapter 6. Along with the names of the companies, the buy dates and resulting 12 month return is shown. The table is ranked by date.

Year	Month	Company	12-month Return
1997	Apr	CAPITAL PROPERTY FD.	11.39%
1997	May	CAPITAL PROPERTY FD.	14.47%
1997	Jun	CAPITAL PROPERTY FD.	22.04%
1997	Aug	CAPITAL PROPERTY FD.	-31.06%
1997	Sep	CAPITAL PROPERTY FD.	-30.47%
1997	Oct	CAPITAL PROPERTY FD.	-21.81%
1997	Nov	CAPITAL PROPERTY FD.	-12.40%
1997	Dec	CAPITAL PROPERTY FD	-24.92%
1998	Jan	CAPITAL PROPERTY FD.	-15.59%
1998	Feb	CAPITAL PROPERTY FD.	-25.83%
1998	Apr	CAPITAL PROPERTY FD.	22.07%
1998	May	CAPITAL PROPERTY FD.	24.74%
1998	Jun	CAPITAL PROPERTY FD.	20.22%
1998	Sep	CAPITAL PROPERTY FD.	120.26%
1998	Oct	CAPITAL PROPERTY FD.	124.14%
1998	Nov	AVI	113.05%
1998	Nov	CAPITAL PROPERTY FD.	104.67%
1998	Nov	HUDACO	80.29%
1998	Dec	AECI	103.78%
1998	Dec	AVI	127.78%
1998	Dec	CAPITAL PROPERTY FD.	109.21%
1998	Dec	HARMONY GOLD MNG.	51.43%
1998	Dec	HUDACO	83.77%
1999	Jan	AECI	143.54%
1999	Jan	AFN.RAINBOW MRLS.	135.52%
1999	Jan	AVI	158.71%
1999	Jan	ELB GROUP	98.14%
1999	Feb	AECI	129.48%
1999	Feb	AFN.RAINBOW MRLS.	100.01%
1999	Feb	ELB GROUP	103.88%
1999	Jun	ELB GROUP	27.44%
1999	Jul	ELB GROUP	14.64%
1999	Jul	GROUP FIVE	35.90%
1999	Aug	AVI	91.16%
1999	Aug	CAPITAL PROPERTY FD.	9.55%
1999	Aug	DORBYL	21.62%
1999	Aug	ELB GROUP	5.04%
1999	Aug	GROUP FIVE	-4.58%
1999	Aug	HUDACO	12.51%
1999	Sep	AVI	80.93%
1999	Sep	BDGSN.FRSTN.MXPR.	-30.86%
1999	Sep	CAPITAL PROPERTY FD.	25.36%
1999	Sep	EDGARS CONS.STORES	-23.93%
1999	Sep	ELB GROUP	-16.87%
1999	Sep	GROUP FIVE	-2.16%
1999	Sep	HUDACO	24.50%
1999	Oct	AVI	38.11%
1999	Oct	BDGSN.FRSTN.MXPR.	-33.77%
1999	Oct	CAPITAL PROPERTY FD.	29.80%
1999	Oct	ELB GROUP	-12.89%
1999	Oct	HUDACO	7.33%
1999	Nov	AECI	-5.26%
1999	Nov	BDGSN.FRSTN.MXPR.	-18.98%
1999	Nov	CAPITAL PROPERTY FD.	29.44%
1999	Dec	AECI	9.87%
1999	Dec	CITY LODGE HOTELS	-11.76%
1999	Dec	GRINDROD	101.19%
1999	Dec	GROUP FIVE	-41.75%
2000	Jan	AECI	9.80%
2000	Jan	CITY LODGE HOTELS	-0.94%
2000	Jan	ELB GROUP	-3.78%
2000	Jan	GROUP FIVE	-32.15%
2000	Feb	AECI	8.21%
2000	Feb	CITY LODGE HOTELS	11.69%
2000	Feb	COMBINED MOTOR	23.28%
2000	Feb	ELB GROUP	-5.51%
2000	Feb	ENVIROSERV	115.43%
2000	Feb	GROUP FIVE	-17.36%
2000	Mar	ALLAN GRAY PR.TRUST	45.99%
2000	Mar	ARGENT INDUSTRIAL	9.36%
2000	Mar	AVI	30.16%
2000	Mar	COMBINED MOTOR	23.33%
2000	Mar	CROOKES BROTHERS	5.55%
2000	Mar	ELB GROUP	35.71%
2000	Mar	ENVIROSERV	59.29%
2000	Mar	GROUP FIVE	0.25%
2000	Apr	ALLAN GRAY PR.TRUST	47.96%
2000	Apr	ARGENT INDUSTRIAL	24.26%
2000	Apr	AVI	36.14%
2000	Apr	COMBINED MOTOR	61.96%
2000	Apr	CROOKES BROTHERS	6.53%
2000	Apr	ELB GROUP	38.91%
2000	Apr	GRINDROD	127.30%
2000	Apr	GROUP FIVE	3.89%
2000	May	ALLAN GRAY PR.TRUST	51.39%
2000	May	ARGENT INDUSTRIAL	23.46%
2000	May	AVI	42.85%
2000	May	CARGO CARRIERS	-11.84%
2000	May	COMBINED MOTOR	95.35%
2000	May	CROOKES BROTHERS	50.91%
2000	May	ELB GROUP	42.09%
2000	May	ENVIROSERV	84.47%
2000	May	GRINDROD	126.79%
2000	May	GROUP FIVE	49.82%
2000	Jun	ALLAN GRAY PR.TRUST	53.45%
2000	Jun	ARGENT INDUSTRIAL	52.16%
2000	Jun	BRANDCORP	52.09%
2000	Jun	CARGO CARRIERS	-7.52%
2000	Jun	COMBINED MOTOR	68.33%
2000	Jun	CROOKES BROTHERS	52.94%
2000	Jun	GRINDROD	96.68%
2000	Jun	GROUP FIVE	80.63%
2000	Jul	ALLAN GRAY PR.TRUST	55.09%
2000	Jul	ARGENT INDUSTRIAL	50.82%
2000	Jul	CARGO CARRIERS	-23.65%
2000	Jul	COMBINED MOTOR	81.93%
2000	Jul	GRINDROD	87.13%

Year	Month	Company	12-month Return
2000	Jul	GROUP FIVE	40.57%
2000	Aug	ALLAN GRAY PR.TRUST	47.90%
2000	Aug	ARGENT INDUSTRIAL	102.59%
2000	Aug	BRANDCORP	85.19%
2000	Aug	BRIMSTONE INV.'N'	-41.53%
2000	Aug	CARGO CARRIERS	-14.15%
2000	Aug	CROOKES BROTHERS	61.50%
2000	Aug	GRINDROD	80.48%
2000	Aug	GROUP FIVE	65.17%
2000	Sep	ALLAN GRAY PR.TRUST	38.88%
2000	Sep	ARGENT INDUSTRIAL	78.30%
2000	Sep	BRANDCORP	40.67%
2000	Sep	CARGO CARRIERS	-5.41%
2000	Sep	GRINDROD	69.52%
2000	Sep	GROUP FIVE	64.86%
2000	Sep	INMINS	57.96%
2000	Sep	INVICTA	13.80%
2000	Oct	ARGENT INDUSTRIAL	94.26%
2000	Oct	BRANDCORP	67.64%
2000	Oct	CARGO CARRIERS	33.54%
2000	Oct	CROOKES BROTHERS	54.38%
2000	Oct	GRINDROD	100.87%
2000	Oct	GROUP FIVE	161.70%
2000	Oct	INMINS	49.35%
2000	Oct	INVICTA	27.83%
2000	Nov	ALLAN GRAY PR.TRUST	23.87%
2000	Nov	ARGENT INDUSTRIAL	86.21%
2000	Nov	BRANDCORP	73.58%
2000	Nov	CARGO CARRIERS	16.11%
2000	Nov	CROOKES BROTHERS	72.34%
2000	Nov	GRINDROD	82.22%
2000	Nov	HUDACO	66.89%
2000	Nov	INMINS	37.88%
2000	Nov	INVICTA	40.08%
2000	Dec	ARGENT INDUSTRIAL	58.59%
2000	Dec	BRANDCORP	56.46%
2000	Dec	CARGO CARRIERS	53.70%
2000	Dec	CONTROL INSTRUMENTS GP.	-50.92%
2000	Dec	CROOKES BROTHERS	73.90%
2000	Dec	HUDACO	80.70%
2000	Dec	INMINS	102.78%
2000	Dec	INVICTA	15.09%
2001	Jan	CONTROL INSTRUMENTS GP.	-26.31%
2001	Feb	BRANDCORP	44.12%
2001	Feb	CONTROL INSTRUMENTS GP.	-46.26%
2001	Mar	ASTRAPAK	62.75%
2001	Mar	BRANDCORP	24.57%
2001	Mar	CROOKES BROTHERS	84.83%
2001	Mar	GLENRAND M I B	86.85%
2001	Mar	ILLOVO SUGAR	88.73%
2001	Apr	ARGENT INDUSTRIAL	68.84%
2001	Apr	ASTRAPAK	31.44%
2001	Apr	BRANDCORP	62.89%
2001	Apr	CARGO CARRIERS	14.02%
2001	Apr	CROOKES BROTHERS	95.98%
2001	Apr	ILLOVO SUGAR	35.56%
2001	Apr	INMINS	78.67%
2001	May	ALLAN GRAY PR.TRUST	8.42%
2001	May	ASTRAPAK	81.67%
2001	May	AVENG	16.15%
2001	May	BRANDCORP	73.36%
2001	May	CARGO CARRIERS	109.10%
2001	May	CROOKES BROTHERS	56.61%
2001	May	GLENRAND M I B	89.10%
2001	May	GROUP FIVE	30.91%
2001	May	INMINS	79.66%
2001	Jun	ALLAN GRAY PR.TRUST	0.75%
2001	Jun	ARGENT INDUSTRIAL	54.87%
2001	Jun	ASTRAPAK	58.94%
2001	Jun	AVENG	7.63%
2001	Jun	BRANDCORP	98.71%
2001	Jun	CARGO CARRIERS	112.95%
2001	Jun	CROOKES BROTHERS	50.00%
2001	Jun	CULLINAN	174.58%
2001	Jun	DISTELL GROUP	98.92%
2001	Jun	ELB GROUP	23.81%
2001	Jun	GROUP FIVE	8.68%
2001	Jun	HUDACO	54.92%
2001	Jun	ILLOVO SUGAR	16.84%
2001	Jun	INMINS	39.72%
2001	Jul	AVENG	4.64%
2001	Jul	BRANDCORP	76.47%
2001	Jul	CROOKES BROTHERS	48.15%
2001	Jul	CULLINAN	139.19%
2001	Jul	ELB GROUP	35.18%
2001	Jul	ILLOVO SUGAR	15.91%
2001	Jul	INMINS	107.35%
2001	Aug	ARGENT INDUSTRIAL	16.36%
2001	Aug	ASTRAPAK	-5.48%
2001	Aug	AVENG	5.94%
2001	Aug	BRANDCORP	80.00%
2001	Aug	CARGO CARRIERS	124.09%
2001	Aug	CULLINAN	157.28%
2001	Aug	ELB GROUP	12.84%
2001	Aug	ILLOVO SUGAR	12.21%
2001	Aug	INMINS	109.07%
2001	Sep	ARGENT INDUSTRIAL	40.57%
2001	Sep	ASTRAPAK	-8.12%
2001	Sep	BDGSN.FRSTN.MXPR.	37.63%
2001	Sep	BRANDCORP	102.05%
2001	Sep	CARGO CARRIERS	166.30%
2001	Sep	CROOKES BROTHERS	50.74%
2001	Sep	ILLOVO SUGAR	15.38%
2001	Sep	INMINS	85.63%
2001	Oct	ARGENT INDUSTRIAL	72.66%
2001	Oct	ASTRAPAK	-8.12%
2001	Oct	BDGSN.FRSTN.MXPR.	32.54%

Appendix D.12. Companies selected by final winner filter

Continued.

Year	Month	Company	12-month Return
2001	Oct	BRANDCORP	104.40%
2001	Oct	CARGO CARRIERS	148.39%
2001	Oct	CROOKES BROTHERS	43.18%
2001	Oct	GROUP FIVE	46.83%
2001	Oct	HUDACO	58.05%
2001	Oct	ILLOVO SUGAR	30.23%
2001	Oct	INMINS	90.02%
2001	Nov	ARGENT INDUSTRIAL	96.99%
2001	Nov	ASTRAPAK	25.47%
2001	Nov	BDGSN.FRSTN.MXPR.	20.47%
2001	Nov	BRANDCORP	129.67%
2001	Nov	CARGO CARRIERS	153.44%
2001	Nov	CROOKES BROTHERS	54.27%
2001	Nov	EDGARS CONS.STORES	92.05%
2001	Nov	GROUP FIVE	48.53%
2001	Nov	HUDACO	61.65%
2001	Nov	INMINS	92.07%
2001	Dec	AECI	55.00%
2001	Dec	AFN.RAINBOW MRLS.	9.57%
2001	Dec	ARGENT INDUSTRIAL	128.08%
2001	Dec	ASTRAPAK	31.73%
2001	Dec	BDGSN.FRSTN.MXPR.	25.26%
2001	Dec	BRANDCORP	131.99%
2001	Dec	CARGO CARRIERS	102.83%
2001	Dec	CROOKES BROTHERS	45.60%
2001	Dec	GROUP FIVE	79.78%
2001	Dec	HUDACO	46.49%
2001	Dec	INMINS	86.44%
2002	Jan	AFN.RAINBOW MRLS.	31.25%
2002	Jan	ARGENT INDUSTRIAL	119.81%
2002	Jan	ASTRAPAK	33.42%
2002	Jan	BDGSN.FRSTN.MXPR.	-12.49%
2002	Jan	BRANDCORP	114.01%
2002	Jan	BRIMSTONE INV.'N'	88.46%
2002	Jan	CARGO CARRIERS	191.50%
2002	Jan	CROOKES BROTHERS	30.51%
2002	Jan	GROUP FIVE	103.41%
2002	Jan	HUDACO	33.94%
2002	Jan	INMINS	89.77%
2002	Feb	AFN.RAINBOW MRLS.	18.62%
2002	Feb	ARGENT INDUSTRIAL	104.90%
2002	Feb	BDGSN.FRSTN.MXPR.	0.00%
2002	Feb	BRANDCORP	155.66%
2002	Feb	CROOKES BROTHERS	27.97%
2002	Feb	DORBYL	34.07%
2002	Feb	EDGARS CONS.STORES	133.39%
2002	Feb	GROUP FIVE	66.91%
2002	Feb	HUDACO	25.16%
2002	Feb	INMINS	68.58%
2002	Mar	AFN.RAINBOW MRLS.	-11.14%
2002	Mar	BDGSN.FRSTN.MXPR.	-11.24%
2002	Mar	CARGO CARRIERS	171.88%
2002	Mar	CROOKES BROTHERS	27.86%
2002	Mar	DORBYL	16.89%
2002	Mar	GRINDROD	16.20%
2002	Mar	GROUP FIVE	69.32%
2002	Mar	HUDACO	27.91%
2002	Mar	ILLOVO SUGAR	-10.51%
2002	Mar	INMINS	31.99%
2002	Apr	AFGRI	-27.38%
2002	Apr	BDGSN.FRSTN.MXPR.	-38.28%
2002	Apr	BRANDCORP	103.56%
2002	Apr	CROOKES BROTHERS	9.38%
2002	Apr	DORBYL	28.15%
2002	Apr	GRINDROD	11.86%
2002	Apr	HUDACO	37.83%
2002	May	AFGRI	-11.66%
2002	May	BDGSN.FRSTN.MXPR.	-48.80%
2002	May	BRANDCORP	82.42%
2002	May	CROOKES BROTHERS	10.74%
2002	May	GRINDROD	20.92%
2002	Jun	AFGRI	-14.60%
2002	Jun	BDGSN.FRSTN.MXPR.	-34.37%
2002	Jun	CASHBU LD	253.83%
2002	Jun	CROOKES BROTHERS	7.04%
2002	Jun	ENVIROSERV	79.66%
2002	Jun	INMINS	109.76%
2002	Jul	AFGRI	3.51%
2002	Jul	BDGSN.FRSTN.MXPR.	-23.47%
2002	Jul	CASHBUILD	277.05%
2002	Jul	ENVIROSERV	86.78%
2002	Jul	INMINS	54.68%
2002	Aug	AFGRI	7.77%
2002	Aug	AMAL.APPC.	80.36%
2002	Aug	BDGSN.FRSTN.MXPR.	-21.49%
2002	Aug	CASHBUILD	183.83%
2002	Aug	ENVIROSERV	80.70%
2002	Aug	INMINS	80.81%
2002	Sep	ADVTECH	77.10%
2002	Sep	AFGRI	13.04%
2002	Sep	AMAL.APPC.	106.15%
2002	Sep	ASTRAL FOODS	94.53%
2002	Sep	BDGSN.FRSTN.MXPR.	-13.96%
2002	Sep	CASHBUILD	143.11%
2002	Sep	CONTROL INSTRUMENTS GP.	37.11%
2002	Sep	ENVIROSERV	63.51%
2002	Sep	INMINS	88.51%
2002	Oct	ADVTECH	90.37%
2002	Oct	AFGRI	9.72%
2002	Oct	ASTRAL FOODS	106.86%
2002	Oct	BDGSN.FRSTN.MXPR.	-16.89%
2002	Oct	CARGO CARRIERS	25.30%
2002	Oct	CASHBUILD	186.67%
2002	Oct	ENVIROSERV	50.76%
2002	Oct	INMINS	137.38%
2002	Nov	ADVTECH	99.32%
2002	Nov	BDGSN.FRSTN.MXPR.	-14.96%

Year	Month	Company	12-month Return
2002	Nov	CARGO CARRIERS	26.88%
2002	Nov	CASHBUILD	135.55%
2002	Nov	CROOKES BROTHERS	41.64%
2002	Nov	INMINS	134.76%
2002	Dec	ADCORP	97.66%
2002	Dec	ADVTECH	109.47%
2002	Dec	AFGRI	8.77%
2002	Dec	BDGSN.FRSTN.MXPR.	-26.24%
2002	Dec	CROOKES BROTHERS	51.65%
2002	Dec	ELB GROUP	50.35%
2002	Dec	INMINS	120.91%
2003	Jan	ADCORP	87.61%
2003	Jan	ADVTECH	134.07%
2003	Jan	AFGRI	24.22%
2003	Jan	ASTRAL FOODS	76.31%
2003	Jan	BDGSN.FRSTN.MXPR.	-2.20%
2003	Jan	CROOKES BROTHERS	52.14%
2003	Jan	ELB GROUP	74.50%
2003	Jan	INMINS	147.66%
2003	Feb	ADCORP	111.06%
2003	Feb	AFGRI	61.73%
2003	Feb	ASTRAL FOODS	88.55%
2003	Feb	ASTRAPAK	79.11%
2003	Feb	BDGSN.FRSTN.MXPR.	-25.68%
2003	Feb	CROOKES BROTHERS	72.41%
2003	Feb	DATATEC	195.96%
2003	Feb	DS.& WHSG.NETWORK	155.98%
2003	Feb	ELB GROUP	86.56%
2003	Feb	ELLERINE	72.65%
2003	Feb	GIJIMA AST GROUP	8.93%
2003	Feb	INMINS	199.17%
2003	Mar	ADCORP	118.80%
2003	Mar	ADVTECH	141.89%
2003	Mar	AFGRI	77.42%
2003	Mar	ASTRAPAK	101.88%
2003	Mar	BDGSN.FRSTN.MXPR.	-15.32%
2003	Mar	CROOKES BROTHERS	58.39%
2003	Mar	DATATEC	294.61%
2003	Mar	DS.& WHSG.NETWORK	182.26%
2003	Mar	ELB GROUP	79.19%
2003	Mar	ELLERINE	91.63%
2003	Apr	ADCORP	103.79%
2003	Apr	ADVTECH	121.34%
2003	Apr	AFGRI	78.34%
2003	Apr	ASTRAPAK	117.39%
2003	Apr	BDGSN.FRSTN.MXPR.	6.28%
2003	Apr	CROOKES BROTHERS	70.32%
2003	Apr	DS.& WHSG.NETWORK	167.13%
2003	Apr	ELB GROUP	74.65%
2003	Apr	ELLERINE	78.75%
2003	Apr	INMINS	172.12%
2003	May	ALLIED ELECTRONICS	42.87%
2003	May	BDGSN.FRSTN.MXPR.	36.68%
2003	May	DS.& WHSG.NETWORK	143.83%
2003	Jun	ALLIED ELECTRONICS	44.64%
2003	Jun	ASTRAPAK	83.79%
2003	Jun	COMAIR	-13.81%
2003	Jun	DORBYL	35.68%
2003	Jun	GRINDROD	239.74%
2003	Jun	INMINS	106.50%
2003	Jul	ALLIED ELECTRONICS	39.67%
2003	Jul	ASTRAPAK	58.80%
2003	Jul	COMAIR	-4.12%
2003	Jul	DORBYL	50.36%
2003	Jul	ELLERINE	51.63%
2003	Jul	GRINDROD	280.38%
2003	Jul	INMINS	153.75%
2003	Aug	ADCORP	86.14%
2003	Aug	ADVTECH	57.20%
2003	Aug	ALLIED ELECTRONICS	34.22%
2003	Aug	BELL EQUIPMENT	-7.98%
2003	Aug	BUSINESS CONNEXION GROUP	18.06%
2003	Aug	BYTES TECH.GP.	60.19%
2003	Aug	COMAIR	-9.29%
2003	Aug	DATATEC	8.92%
2003	Aug	ELLERINE	40.33%
2003	Aug	GRINDROD	214.96%
2003	Aug	INMINS	126.62%
2003	Sep	ADCORP	97.00%
2003	Sep	ADVTECH	65.52%
2003	Sep	ALLIED ELECTRONICS	39.05%
2003	Sep	BELL EQUIPMENT	-4.49%
2003	Sep	BYTES TECH.GP.	68.38%
2003	Sep	DATATEC	23.70%
2003	Sep	ELLERINE	61.97%
2003	Sep	GRINDROD	237.05%
2003	Sep	INMINS	113.68%
2003	Oct	ADCORP	71.72%
2003	Oct	ADVTECH	77.43%
2003	Oct	ALLIED ELECTRONICS	62.77%
2003	Oct	BYTES TECH.GP.	45.93%
2003	Oct	ELLERINE	73.77%
2003	Oct	GRINDROD	203.46%
2003	Oct	INMINS	79.71%
2003	Nov	ADCORP	56.77%
2003	Nov	ADVTECH	85.06%
2003	Nov	ALLIED ELECTRONICS	64.76%
2003	Nov	CONNECTION GP.	96.70%
2003	Nov	CROOKES BROTHERS	11.89%
2003	Nov	GRINDROD	245.19%
2003	Nov	INMINS	85.19%
2003	Dec	CADIZ	70.00%
2003	Dec	CAPITAL PROPERTY FD.	56.47%
2003	Dec	CONNECTION GP.	101.35%
2003	Dec	CROOKES BROTHERS	-1.60%
2003	Dec	ELLERINE	78.01%
2003	Dec	ENVIROSERV	33.70%
2003	Dec	GLENRAND M I B	33.76%

Appendix E

This appendix refers to Chapter 7: Derivation of Loser Filter Rules

Appendix E.1. Relative median values for signal variables: losers

The table below shows each of the eleven proposed filter levels for each variable in terms of the relative median technique for the winner tests. This technique considers the medians of each of the variables for the loser portfolio. It then takes the difference between these medians and the medians of the non-loser portfolios (D). The values in the table are calculated as five points on either side of the loser median, each (2 × D / 5) further away from this midpoint. The median values for the loser portfolio are indicated in bold.

	1	2	3	4	5	6	7	8	9	10	11
EY	-0.0046	0.0122	0.0290	0.0458	0.0626	0.0794	0.0962	0.1129	0.1297	0.1465	0.1633
MTB	-0.1200	0.2500	0.6200	0.9900	1.3600	1.7300	2.1000	2.4700	2.8400	3.2100	3.5800
AGE	0.9500	2.2556	3.5611	4.8667	6.1722	7.4778	8.7833	10.0889	11.3944	12.7000	14.0056
MOM_24	-0.8899	-0.7047	-0.5195	-0.3342	-0.1490	0.0362	0.2214	0.4066	0.5919	0.7771	0.9623
MOM_18	-0.9228	-0.7397	-0.5566	-0.3735	-0.1904	-0.0073	0.1758	0.3589	0.5420	0.7251	0.9082
MAXP_24	0.4451	0.5004	0.5557	0.6111	0.6664	0.7217	0.7771	0.8324	0.8877	0.9431	0.9984
MAXP_12	0.5572	0.6057	0.6543	0.7029	0.7514	0.8000	0.8486	0.8971	0.9457	0.9943	1.0428
MOM_12	-0.5179	-0.4126	-0.3073	-0.2020	-0.0966	0.0087	0.1140	0.2193	0.3246	0.4299	0.5352
VOL_6	-0.0251	0.0882	0.2015	0.3148	0.4281	0.5414	0.6547	0.7680	0.8813	0.9946	1.1079
VOL_12	0.0779	0.1634	0.2489	0.3344	0.4200	0.5055	0.5910	0.6766	0.7621	0.8476	0.9332
SALEStCASH	-10.4508	-6.9202	-3.3895	0.1411	3.6717	7.2024	10.7330	14.2636	17.7942	21.3249	24.8555
CH_ARtSALES	-0.2913	-0.1878	-0.0843	0.0193	0.1228	0.2263	0.3298	0.4334	0.5369	0.6404	0.7440
CH_DPS	-0.5251	-0.4106	-0.2960	-0.1815	-0.0669	0.0476	0.1622	0.2767	0.3912	0.5058	0.6203
CH_TA	-0.1104	-0.0533	0.0038	0.0609	0.1180	0.1751	0.2322	0.2893	0.3464	0.4036	0.4607
CH_DEP	-0.1744	-0.0894	-0.0043	0.0807	0.1658	0.2508	0.3359	0.4209	0.5059	0.5910	0.6760
EARNG_60	-0.0375	-0.0064	0.0246	0.0557	0.0868	0.1179	0.1489	0.1800	0.2111	0.2421	0.2732
CH_INV	-0.4171	-0.2805	-0.1439	-0.0073	0.1292	0.2658	0.4024	0.5389	0.6755	0.8121	0.9486
WCtTA	0.1666	0.2770	0.3873	0.4977	0.6080	0.7183	0.8287	0.9390	1.0494	1.1597	1.2700
CH_CAPGEAR	-0.1839	-0.1444	-0.1050	-0.0655	-0.0260	0.0135	0.0530	0.0924	0.1319	0.1714	0.2109
ROE	0.0642	0.0935	0.1228	0.1521	0.1814	0.2107	0.2400	0.2693	0.2986	0.3279	0.3572
CH_INVTURN	-0.7626	-0.5938	-0.4249	-0.2560	-0.0872	0.0817	0.2506	0.4195	0.5883	0.7572	0.9261
EPS	-0.5200	-0.3300	-0.1400	0.0500	0.2400	0.4300	0.6200	0.8100	1.0000	1.1900	1.3800
DY	-0.0047	0.0003	0.0053	0.0103	0.0153	0.0203	0.0253	0.0303	0.0352	0.0402	0.0452
CH_ARISALES	-0.1908	-0.1502	-0.1096	-0.0689	-0.0283	0.0124	0.0530	0.0937	0.1343	0.1749	0.2156
INVtTA	0.0375	0.0572	0.0769	0.0966	0.1163	0.1361	0.1558	0.1755	0.1952	0.2149	0.2346
CH_ASSTURN	-0.1318	-0.1068	-0.0818	-0.0567	-0.0317	-0.0067	0.0184	0.0434	0.0684	0.0935	0.1185
CH_EBTtSALES	-0.1468	-0.1197	-0.0925	-0.0654	-0.0383	-0.0111	0.0160	0.0431	0.0703	0.0974	0.1245
GM	-0.0383	-0.0002	0.0379	0.0760	0.1141	0.1522	0.1903	0.2284	0.2665	0.3046	0.3427
EARNG_24	-0.0246	-0.0150	-0.0055	0.0041	0.0137	0.0232	0.0328	0.0423	0.0519	0.0614	0.0710
CH_SALES	-0.0100	0.0164	0.0427	0.0690	0.0954	0.1217	0.1481	0.1744	0.2007	0.2271	0.2534
POS_SALES	3.0000	4.0000	5.0000	6.0000	7.0000	8.0000	9.0000	10.0000	11.0000	12.0000	13.0000
POS_ROE	-3.0000	-1.0000	1.0000	3.0000	5.0000	7.0000	9.0000	11.0000	13.0000	15.0000	17.0000
POS_OP	-1.0000	1.0000	3.0000	5.0000	7.0000	9.0000	11.0000	13.0000	15.0000	17.0000	19.0000
RSTRENGTH_ALSI	0.0411	0.1199	0.1986	0.2773	0.3561	0.4348	0.5135	0.5922	0.6710	0.7497	0.8284
WRSTRENGTH_ALSI	0.1832	0.2383	0.2935	0.3486	0.4038	0.4589	0.5141	0.5692	0.6244	0.6795	0.7347
MAN_OWN(-6m)	-0.1300	0.0100	0.1500	0.2900	0.4300	0.5700	0.7100	0.8500	0.9900	1.1300	1.2700
CH_ARISALES(-6m)	-0.3717	-0.2949	-0.2181	-0.1413	-0.0644	0.0124	0.0892	0.1660	0.2428	0.3196	0.3965
EARNG_12(-6m)	-0.0049	-0.0011	0.0027	0.0066	0.0104	0.0142	0.0180	0.0218	0.0256	0.0294	0.0332
CH_ASSTURN(-6m)	-0.1343	-0.1088	-0.0832	-0.0577	-0.0322	-0.0067	0.0189	0.0444	0.0699	0.0954	0.1209
VOL_12(-9m)	-0.2984	-0.1376	0.0232	0.1839	0.3447	0.5055	0.6663	0.8271	0.9879	1.1487	1.3094
VOL_6(-9m)	-0.6155	-0.3841	-0.1527	0.0787	0.3100	0.5414	0.7728	1.0042	1.2356	1.4669	1.6983
SDEV_VOL(-9m)	-0.1904	-0.0525	0.0853	0.2232	0.3611	0.4990	0.6368	0.7747	0.9126	1.0505	1.1883
EARNG_12(-9m)	-0.0180	-0.0115	-0.0051	0.0013	0.0077	0.0142	0.0206	0.0270	0.0335	0.0399	0.0463
ACCtTA(-9m)	-0.1116	-0.0936	-0.0756	-0.0576	-0.0396	-0.0216	-0.0037	0.0143	0.0323	0.0503	0.0683
CH_ARISALES(-9m)	-0.4617	-0.3669	-0.2721	-0.1772	-0.0824	0.0124	0.1072	0.2020	0.2968	0.3916	0.4864
CH_TA(-9m)	-0.0623	-0.0148	0.0327	0.0802	0.1276	0.1751	0.2226	0.2701	0.3176	0.3650	0.4125
CH_DEP(-9m)	-0.2972	-0.1876	-0.0780	0.0316	0.1412	0.2508	0.3604	0.4700	0.5796	0.6892	0.7988
INVtTA(-9m)	-0.0205	0.0108	0.0421	0.0734	0.1047	0.1361	0.1674	0.1987	0.2300	0.2613	0.2926
SALEStCASH(-9m)	2.6913	3.5935	4.4957	5.3979	6.3001	7.2024	8.1046	9.0068	9.9090	10.8112	11.7134
WCtTA(-9m)	0.3650	0.4357	0.5063	0.5770	0.6477	0.7183	0.7890	0.8597	0.9303	1.0010	1.0717
CH_ASSTURN(-9m)	-0.2193	-0.1768	-0.1343	-0.0917	-0.0492	-0.0067	0.0359	0.0784	0.1209	0.1635	0.2060
CH_SAISALES(-9m)	-0.7636	-0.5942	-0.4249	-0.2555	-0.0862	0.0832	0.2525	0.4219	0.5913	0.7606	0.9300
ROE(-9m)	0.0497	0.0819	0.1141	0.1463	0.1785	0.2107	0.2429	0.2751	0.3073	0.3395	0.3717
CH_DPS(-9m)	-0.2565	-0.1956	-0.1348	-0.0740	-0.0132	0.0476	0.1084	0.1692	0.2301	0.2909	0.3517
CH_ARtSALES(-9m)	0.0204	0.0616	0.1028	0.1440	0.1851	0.2263	0.2675	0.3087	0.3498	0.3910	0.4322
POS_NET(-9m)	5.0000	6.0000	7.0000	8.0000	9.0000	10.0000	11.0000	12.0000	13.0000	14.0000	15.0000
WRSTRENGTH_ALSI(-9	0.1548	0.2156	0.2764	0.3373	0.3981	0.4589	0.5198	0.5806	0.6414	0.7023	0.7631
MOM_6(-12m)	-0.1273	-0.0969	-0.0665	-0.0361	-0.0058	0.0246	0.0550	0.0853	0.1157	0.1461	0.1764
MOM_24(-12m)	-0.4978	-0.3910	-0.2842	-0.1774	-0.0706	0.0362	0.1430	0.2498	0.3566	0.4634	0.5702
EARNG_12(-12m)	-0.0202	-0.0133	-0.0065	0.0004	0.0073	0.0142	0.0210	0.0279	0.0348	0.0417	0.0486
CH_SAISALES(-12m)	-1.2602	-0.9915	-0.7228	-0.4542	-0.1855	0.0832	0.3519	0.6205	0.8892	1.1579	1.4266
CH_DEP(-12m)	-0.3409	-0.2225	-0.1042	0.0141	0.1325	0.2508	0.3692	0.4875	0.6058	0.7242	0.8425
ACCtTA(-12m)	-0.1283	-0.1070	-0.0857	-0.0643	-0.0430	-0.0216	-0.0003	0.0210	0.0424	0.0637	0.0850
CH_ARISALES(-12m)	-0.4839	-0.3847	-0.2854	-0.1862	-0.0869	0.0124	0.1116	0.2109	0.3102	0.4094	0.5087
CH_DPS(-12m)	-0.5476	-0.4286	-0.3095	-0.1905	-0.0714	0.0476	0.1667	0.2857	0.4048	0.5238	0.6429
CH_TA(-12m)	-0.0462	-0.0019	0.0423	0.0866	0.1309	0.1751	0.2194	0.2636	0.3079	0.3522	0.3964
WCtTA(-12m)	0.3457	0.4202	0.4947	0.5693	0.6438	0.7183	0.7929	0.8674	0.9419	1.0165	1.0910
ROE(-12m)	0.0412	0.0751	0.1090	0.1429	0.1768	0.2107	0.2446	0.2785	0.3124	0.3463	0.3802
CH_ARtSALES(-12m)	-0.0765	-0.0159	0.0446	0.1052	0.1657	0.2263	0.2869	0.3474	0.4080	0.4686	0.5291
SALEStCASH(-12m)	0.4647	1.8123	3.1598	4.5073	5.8548	7.2024	8.5499	9.8974	11.2449	12.5924	13.9400
INVtTA(-12m)	-0.0242	0.0078	0.0399	0.0719	0.1040	0.1361	0.1681	0.2002	0.2322	0.2643	0.2963
CH_ASSTURN(-12m)	-0.2893	-0.2327	-0.1762	-0.1197	-0.0632	-0.0067	0.0498	0.1064	0.1629	0.2194	0.2759
CH_CAPGEAR(-12m)	-0.2143	-0.1688	-0.1232	-0.0776	-0.0321	0.0135	0.0590	0.1046	0.1501	0.1957	0.2413
REVISION_12(-12m)	-0.2874	-0.2436	-0.1999	-0.1561	-0.1123	-0.0685	-0.0247	0.0191	0.0628	0.1066	0.1504
POS_NET(-12m)	5.0000	6.0000	7.0000	8.0000	9.0000	10.0000	11.0000	12.0000	13.0000	14.0000	15.0000
POS_SALES(-12m)	-2.0000	0.0000	2.0000	4.0000	6.0000	8.0000	10.0000	12.0000	14.0000	16.0000	18.0000

Appendix E.2. Results for static comparison level tests

The tables below show the results from the stepwise median comparison test where the sample has been restricted to the period from 2000 until 2004. Each table that follows provides the results from this test while using a particular static comparison level (ranging from 20 to −5 percent). The table shows the filtering variables and their corresponding filter levels as each subsequent filter is added. For example, filter number 3 in the table with CL = 20 percent below represents a filter of all shares in the insample where MTB ≥ 2.47, MAXP_12 ≤ 0.9943 and EY ≤ 0.1633. For each combination of filters the z-statistic from the Wilcoxon signed ranks test comparing the median return of the filtered portfolio to the relevant comparison level along with its p-value is shown. The tables also show the average number of companies held in any month over the period from 2000 until 2004, and the amount of companies held as a proportion of the entire sample. The number of losers picked out of a possible 223 insample losers is indicated. Finally, the tables show the average annual return and annualized standard deviation of monthly portfolio returns of each filtered portfolio over the period from January 2000 until December 2004, as well as the JK statistic and Sharpe ratio.

The tables below also show the calendar time payoffs corresponding to the each of these filters over the entire sample period from January 2000 until December 2004. For each sample year the total return earned by the filtered shares (second column of each year), the number of investment months included in the filtered portfolio (third column of each year) and the corresponding equally-weighted average return for that year are included (first column of each year).

Appendix E.2. Results for static comparison level tests

Continued: Comparison level = 20 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.2	1	10.26	0.0000	MTB	≥ 2.4700	28.97	27.07%	106	8.98%	23.73%	0.15	-0.07
0.2	2	12.09	0.0000	MAXP_12	≤ 0.9943	24.63	23.02%	92	2.85%	23.92%	0.01	-0.33
0.2	3	12.56	0.0000	EY	≤ 0.1633	23.77	22.21%	87	1.40%	24.02%	0.00	-0.39
0.2	4	12.60	0.0000	AGE	≤ 14.0056	18.22	17.02%	83	-6.51%	24.55%	-0.07	-0.70
0.2	5	13.01	0.0000	DY	≤ 0.0452	16.92	15.81%	83	-10.74%	25.98%	-0.16	-0.83
0.2	6	12.83	0.0000	SALEStCASH(-9m)	≤ 8.1046	12.27	11.46%	64	-20.85%	26.30%	-0.59	-1.20
0.2	7	12.31	0.0000	SALESttCASH	≤ 21.3249	11.37	10.62%	55	-21.40%	25.82%	-0.63	-1.24
0.2	8	11.69	0.0000	MAXP_24	≤ 0.9431	10.90	10.19%	54	-22.93%	28.09%	-0.60	-1.20
0.2	9	11.06	0.0000	SALESttCASH(-12m)	≤ 11.2449	10.35	9.67%	52	-22.42%	28.27%	-0.56	-1.17
0.2	10	10.56	0.0000	RSTRENGTH_ALSI	≤ 0.8284	9.43	8.82%	47	-23.76%	28.56%	-0.60	-1.21
0.2	11	10.37	0.0000	MOM_12	≤ 0.5352	8.85	8.27%	45	-23.85%	30.78%	-0.52	-1.12
0.2	12	10.01	0.0000	WRSTRENGTH_ALSI	≤ 0.7347	8.57	8.01%	36	-21.37%	29.15%	-0.46	-1.10
0.2	13	9.62	0.0000	POS_NET(-9m)	≥ 5.0000	6.87	6.42%	32	-23.32%	30.83%	-0.48	-1.11
0.2	14	9.27	0.0000	POS_NET(-12m)	≥ 5.0000	6.35	5.93%	29	-22.63%	31.11%	-0.44	-1.08
0.2	15	8.67	0.0000	WRSTRENGTH_ALSI(-9m)	≥ 0.1548	5.47	5.11%	25	-23.21%	31.15%	-0.45	-1.09
0.2	16	8.29	0.0000	MOM_18	≤ 0.9082	4.98	4.66%	22	-21.81%	29.87%	-0.43	-1.10
0.2	17	7.88	0.0000	MOM_24	≤ 0.9623	4.65	4.35%	18	-20.03%	27.09%	-0.43	-1.15
0.2	18	7.36	0.0000	MOM_6(-12m)	≥ -0.1273	4.40	4.11%	12	-18.38%	26.63%	-0.37	-1.11
0.2	19	6.94	0.0000	EARNG_12(-6m)	≥ -0.0049	3.37	3.15%	10	-20.37%	33.61%	-0.28	-0.94
0.2	20	6.59	0.0000	ROE	≥ 0.0642	3.00	2.80%	6	-16.38%	23.19%	-0.38	-1.19
0.2	21	6.41	0.0000	CH_EBTtSALES	≥ -0.1468	2.73	2.55%	6	-16.35%	25.15%	-0.32	-1.10
0.2	22	6.09	0.0000	EARNG_12(-9m)	≥ -0.0180	2.45	2.29%	5	-15.03%	24.96%	-0.27	-1.06
0.2	23	5.89	0.0000	EARNG_12(-12m)	≥ -0.0202	2.22	2.07%	2	-12.53%	25.26%	-0.18	-0.95
0.2	24	5.75	0.0000	EARNG_24	≤ 0.0614	1.82	1.70%	0	-9.77%	25.34%	-0.11	-0.84
0.2	25	5.57	0.0000	CH_ASSTURN	≤ 0.0935	1.48	1.39%	0	-11.03%	24.84%	-0.14	-0.91
0.2	26	5.44	0.0000	POS_SALES(-12m)	≥ 4.0000	1.43	1.34%	0	-10.83%	25.28%	-0.13	-0.88
0.2	27	5.22	0.0000	REVISION_12(-12m)	≤ 0.1066	1.43	1.34%	0	-11.11%	25.46%	-0.13	-0.89
0.2	28	4.93	0.0000	CH_DPS	≤ 0.3912	1.18	1.11%	0	-10.70%	26.68%	-0.11	-0.83
0.2	29	4.61	0.0000	CH_DEP(-9m)	≥ 0.1412	1.12	1.04%	0	-12.72%	27.40%	-0.15	-0.89
0.2	30	4.44	0.0000	CH_DEP	≥ 0.3359	0.90	0.84%	0	-14.87%	27.97%	-0.19	-0.95
0.2	31	4.00	0.0001	SDEV_VOL(-9m)	≤ 1.1883	0.90	0.84%	0	-12.94%	27.89%	-0.14	-0.87
0.2	32	3.49	0.0003	VOL_6(-9m)	≤ 1.4669	0.88	0.83%	0	-14.77%	28.26%	-0.18	-0.93
0.2	33	3.26	0.0006	VOL_12(-9m)	≤ 1.3094	0.88	0.83%	0	-13.59%	28.26%	-0.15	-0.88
0.2	34	2.89	0.0020	CH_ASSTURN(-6m)	≤ 0.0444	0.70	0.65%	0	-15.32%	30.57%	-0.16	-0.88
0.2	35	2.61	0.0046	ACCITA(-9m)	≤ 0.0323	0.67	0.62%	0	-13.37%	30.43%	-0.12	-0.83
0.2	36	2.45	0.0072	CH_ARtSALES	≥ -0.2913	0.47	0.44%	0	-10.87%	24.58%	-0.12	-0.93
0.2	37	2.10	0.0180	POS_SALES	≤ 10.0000	0.47	0.44%	0	-10.11%	24.58%	-0.11	-0.89
0.2	38	1.89	0.0296	CH_ARISALES(-6m)	≥ 0.2428	0.37	0.34%	0	-12.12%	25.70%	-0.14	-0.93
0.2	39	1.64	0.0502	GM	≤ 0.1522	0.27	0.25%	0	-10.76%	24.57%	-0.12	-0.91
0.2	40	1.34	0.0907	CH_TA(-9m)	≥ -0.0623	0.23	0.22%	0	-8.00%	24.39%	-0.07	-0.79
0.2	41	0.89	0.1856	EPS	≤ 1.3800	0.22	0.20%	0	-8.54%	24.53%	-0.07	-0.80

No	2000			2001			2002			2003			2004		
1	-10.56%	-1706%	1939	-1.77%	-429%	2914	25.17%	5035%	2401	11.91%	2422%	2441	24.04%	3079%	1537
2	-14.52%	-2001%	1653	-4.25%	-848%	2393	20.66%	2672%	1552	8.24%	1308%	1903	11.40%	865%	911
3	-13.69%	-1829%	1603	-5.03%	-987%	2357	21.81%	2732%	1503	0.34%	50%	1750	14.08%	971%	827
4	-21.95%	-2550%	1394	-11.75%	-1971%	2012	7.03%	729%	1244	-6.55%	-585%	1073	30.90%	1053%	409
5	-22.20%	-2518%	1361	-14.99%	-2347%	1879	5.28%	477%	1084	-15.54%	-1083%	836	26.41%	607%	276
6	-20.88%	-1599%	919	-25.39%	-2975%	1406	-13.92%	-817%	704	-19.12%	-703%	441	-15.43%	-183%	142
7	-21.97%	-1591%	869	-23.77%	-2519%	1272	-19.66%	-909%	555	-17.56%	-641%	438	-15.43%	-183%	142
8	-22.58%	-1470%	781	-24.63%	-2248%	1095	-23.34%	-971%	499	-16.67%	-517%	372	-27.29%	-275%	121
9	-20.63%	-1161%	675	-25.07%	-2083%	997	-22.84%	-925%	486	-16.26%	-489%	361	-27.29%	-275%	121
10	-36.44%	-1631%	537	-18.77%	-1298%	830	-24.53%	-963%	471	-13.04%	-348%	320	-27.39%	-251%	110
11	-36.02%	-1546%	515	-18.99%	-1298%	820	-26.10%	-994%	457	-11.87%	-306%	309	-28.01%	-222%	95
12	-35.31%	-1333%	453	-14.75%	-922%	750	-26.10%	-994%	457	-8.27%	-208%	302	-26.96%	-175%	78
13	-37.76%	-1278%	406	-16.71%	-858%	616	-27.27%	-1002%	441	-5.07%	-97%	229	-32.31%	-194%	72
14	-32.62%	-979%	360	-18.43%	-851%	554	-27.27%	-1002%	441	-5.07%	-97%	229	-32.31%	-194%	72
15	-27.25%	-697%	307	-18.04%	-649%	432	-28.09%	-953%	407	-14.15%	-236%	200	-34.89%	-204%	70
16	-23.21%	-538%	278	-18.68%	-643%	413	-28.09%	-953%	407	-9.43%	-132%	168	-29.76%	-134%	54
17	-21.22%	-472%	267	-17.50%	-566%	388	-29.37%	-937%	383	-1.70%	-23%	160	-20.53%	-44%	26
18	-17.77%	-298%	201	-13.35%	-333%	299	-25.02%	-700%	336	-12.48%	-128%	123	-23.20%	-48%	25
19	-34.24%	-297%	104	-13.63%	-277%	244	-23.23%	-621%	321	-12.29%	-125%	122	-41.47%	-45%	13
20	-34.98%	-300%	103	-14.39%	-265%	221	-13.02%	-309%	285	-12.29%	-125%	122	0.00%	0%	1
21	-39.86%	-272%	82	-14.79%	-258%	209	-12.48%	-293%	282	-12.29%	-125%	122	0.00%	0%	1
22	-39.96%	-240%	72	-13.98%	-189%	162	-10.45%	-243%	279	-12.29%	-125%	122	0.00%	0%	1
23	-39.96%	-240%	72	-15.45%	-178%	138	-3.77%	-84%	267	-12.29%	-125%	122	0.00%	0%	1
24	-23.77%	-119%	60	-13.45%	-141%	126	-3.77%	-84%	267	-12.29%	-125%	122	0.00%	0%	1
25	23.86%	66%	33	-19.85%	-194%	117	-4.46%	-93%	251	-30.82%	-231%	90	0.00%	0%	1
26	23.86%	66%	33	-19.85%	-194%	117	-3.98%	-78%	236	-32.03%	-216%	81	0.00%	0%	1
27	23.86%	66%	33	-21.93%	-186%	102	-3.51%	-63%	215	-32.03%	-216%	81	0.00%	0%	1
28	23.86%	66%	33	-19.77%	-166%	101	-2.31%	-33%	171	-32.10%	-209%	78	0.00%	0%	1
29	23.86%	66%	33	-22.04%	-160%	87	-4.66%	-53%	137	-32.10%	-209%	78	0.00%	0%	1
30	23.86%	66%	33	-21.88%	-157%	86	-9.14%	-87%	114	-32.10%	-209%	78	0.00%	0%	1
31	26.27%	63%	29	-21.20%	-138%	78	-12.41%	-83%	80	-21.52%	-115%	64	0.00%	0%	1
32	27.70%	42%	18	-25.12%	-117%	56	-10.45%	-57%	65	-23.99%	-104%	52	0.00%	0%	1
33	27.70%	42%	18	-25.12%	-117%	56	-10.44%	-48%	55	-21.07%	-67%	38	0.00%	0%	1
34	101.89%	25%	3	-26.57%	-86%	39	-9.64%	-41%	51	-21.07%	-67%	38	0.00%	0%	1
35	0.00%	0%	0	-8.44%	-13%	18	-9.64%	-41%	51	-21.07%	-67%	38	0.00%	0%	1
36	0.00%	0%	0	41.48%	21%	6	-9.64%	-41%	51	-21.07%	-67%	38	0.00%	0%	1
37	0.00%	0%	0	41.48%	21%	6	-15.08%	-58%	46	-14.89%	-24%	19	0.00%	0%	1
38	0.00%	0%	0	41.48%	21%	6	-15.08%	-58%	46	-35.30%	-24%	8	0.00%	0%	0
39	0.00%	0%	0	41.48%	21%	6	-15.81%	-54%	41	-116.97%	-10%	1	0.00%	0%	0
40	0.00%	0%	0	41.48%	21%	6	-17.89%	-45%	30	0.00%	0%	0	0.00%	0%	0
41	0.00%	0%	0	44.33%	18%	5	-22.45%	-36%	19	0.00%	0%	0	0.00%	0%	0

Appendix E.2. Results for static comparison level tests

Continued: Comparison level = 15 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.15	1	8.65	0.0000	MTB	≥	3.5800	17.62	16.46%	77	1.88%	30.21%	0.00	-0.29
0.15	2	10.00	0.0000	POS_SALES	≤	13.0000	11.47	10.72%	49	-10.80%	24.29%	-0.20	-0.89
0.15	3	10.74	0.0000	DY	≤	0.0452	9.98	9.33%	47	-16.61%	24.72%	-0.44	-1.11
0.15	4	11.69	0.0000	POS_NET(-12m)	≥	5.0000	7.93	7.41%	39	-22.54%	25.78%	-0.73	-1.29
0.15	5	11.62	0.0000	EY	≤	0.1633	7.88	7.37%	39	-22.67%	26.24%	-0.70	-1.28
0.15	6	11.43	0.0000	POS_NET(-9m)	≥	5.0000	7.72	7.21%	39	-24.59%	26.63%	-0.79	-1.33
0.15	7	11.17	0.0000	MAXP_12	≤	1.0428	6.97	6.51%	36	-24.91%	27.91%	-0.73	-1.28
0.15	8	10.86	0.0000	MAXP_24	≤	0.9984	6.75	6.31%	35	-25.45%	28.01%	-0.74	-1.29
0.15	9	10.63	0.0000	ACCrTA(-12m)	≤	0.0850	6.17	5.76%	34	-26.81%	28.51%	-0.78	-1.32
0.15	10	10.42	0.0000	ACCrTA(-9m)	≤	0.0683	5.87	5.48%	32	-26.68%	28.57%	-0.76	-1.31
0.15	11	9.90	0.0000	CH_TA	≥	-0.1104	5.62	5.25%	31	-27.92%	31.72%	-0.66	-1.22
0.15	12	9.28	0.0000	WRSTRENGTH_ALSI(-9m)	≥	0.1548	4.95	4.63%	27	-27.58%	31.68%	-0.64	-1.21
0.15	13	8.72	0.0000	EARNG_12(-6m)	≥	-0.0049	4.50	4.21%	26	-28.96%	31.71%	-0.70	-1.25
0.15	14	8.33	0.0000	AGE	≤	14.0056	3.92	3.66%	24	-28.83%	34.12%	-0.59	-1.16
0.15	15	8.10	0.0000	RSTRENGTH_ALSI	≤	0.8284	3.47	3.24%	24	-28.87%	34.21%	-0.58	-1.16
0.15	16	7.96	0.0000	MOM_12	≤	0.5352	3.43	3.21%	21	-27.88%	33.93%	-0.54	-1.14
0.15	17	7.82	0.0000	WRSTRENGTH_ALSI	≤	0.7347	3.43	3.21%	18	-26.18%	33.53%	-0.48	-1.10
0.15	18	7.57	0.0000	MOM_18	≤	0.9082	3.17	2.96%	15	-23.95%	34.09%	-0.38	-1.02
0.15	19	7.22	0.0000	POS_ROE	≤	17.0000	2.82	2.63%	15	-25.25%	34.54%	-0.41	-1.04
0.15	20	6.95	0.0000	EARNG_12(-9m)	≥	-0.0180	2.70	2.52%	14	-25.83%	34.31%	-0.43	-1.07
0.15	21	6.84	0.0000	ROE(-9m)	≥	0.1463	2.63	2.46%	12	-24.62%	33.35%	-0.41	-1.07
0.15	22	6.68	0.0000	ROE(-12m)	≥	0.0412	2.57	2.40%	11	-24.42%	33.52%	-0.39	-1.06
0.15	23	6.51	0.0000	EARNG_12(-12m)	≥	-0.0202	2.52	2.35%	11	-24.03%	34.28%	-0.36	-1.02
0.15	24	6.45	0.0000	MOM_24	≤	0.7771	2.32	2.17%	10	-23.16%	33.57%	-0.34	-1.02
0.15	25	6.33	0.0000	EARNG_24	≤	0.0710	2.10	1.96%	8	-20.61%	33.52%	-0.27	-0.94
0.15	26	6.03	0.0000	MOM_6(-12m)	≥	-0.1273	2.08	1.95%	6	-18.53%	34.37%	-0.21	-0.86
0.15	27	5.77	0.0000	ROE	≥	0.0642	1.80	1.68%	2	-12.96%	33.35%	-0.11	-0.72
0.15	28	5.30	0.0000	SDEV_VOL(-9m)	≤	1.1883	1.67	1.56%	2	-12.99%	33.96%	-0.10	-0.71
0.15	29	4.93	0.0000	CH_TA(-9m)	≥	-0.0623	1.57	1.46%	2	-12.21%	37.08%	-0.07	-0.62
0.15	30	4.77	0.0000	CH_TA(-12m)	≥	-0.0462	1.35	1.26%	2	-12.67%	43.85%	-0.06	-0.53
0.15	31	4.18	0.0000	VOL_6(-9m)	≤	1.6983	1.33	1.25%	1	-7.56%	44.13%	-0.02	-0.41
0.15	32	3.90	0.0001	VOL_12(-9m)	≤	1.1487	1.30	1.21%	1	-8.81%	44.16%	-0.03	-0.44
0.15	33	3.49	0.0003	CH_ASSTURN(-12m)	≤	0.2759	0.98	0.92%	0	-2.45%	21.64%	-0.01	-0.61
0.15	34	3.38	0.0004	CH_DPS	≤	0.5058	0.78	0.73%	0	-1.11%	23.98%	0.00	-0.49
0.15	35	3.14	0.0009	CH_DPS(-12m)	≤	0.5238	0.72	0.67%	0	-0.52%	24.69%	0.00	-0.45
0.15	36	3.02	0.0013	POS_SALES(-12m)	≥	6.0000	0.70	0.65%	0	-1.29%	24.79%	0.00	-0.48
0.15	37	2.61	0.0046	EPS	≤	1.3800	0.47	0.44%	0	-0.90%	25.69%	0.00	-0.45
0.15	38	2.45	0.0072	CH_ASSTURN(-6m)	≤	0.0189	0.45	0.42%	0	-1.00%	26.00%	0.00	-0.44
0.15	39	2.10	0.0180	MOM_24(-12m)	≤	0.3566	0.40	0.37%	0	-0.66%	27.48%	0.00	-0.40
0.15	40	1.89	0.0296	REVISION_12(-12m)	≤	0.1504	0.33	0.31%	0	0.50%	25.69%	0.00	-0.38
0.15	41	1.34	0.0907	SALESTCASH	≤	10.7330	0.28	0.26%	0	-0.05%	26.58%	0.00	-0.38
0.15	42	0.89	0.1856	VOL_12	≤	0.9332	0.27	0.25%	0	-2.34%	26.31%	0.00	-0.47

No	2000			2001			2002			2003			2004		
1	-16.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-24.01%	-1098%	549	-0.41%	-38%	1108	-11.35%	-775%	819	-25.01%	-1513%	726	8.50%	240%	338
3	-26.16%	-1184%	543	-5.23%	-456%	1048	-9.74%	-496%	611	-38.07%	-1723%	543	-13.21%	-228%	207
4	-24.83%	-869%	420	-13.44%	-843%	753	-15.57%	-701%	540	-43.14%	-1740%	484	-20.69%	-287%	167
5	-24.83%	-869%	420	-13.44%	-843%	753	-15.57%	-701%	540	-44.58%	-1757%	473	-19.28%	-228%	142
6	-23.89%	-765%	384	-18.22%	-1034%	681	-16.69%	-718%	516	-45.04%	-1730%	461	-19.28%	-228%	142
7	-25.02%	-695%	334	-18.00%	-971%	647	-17.68%	-718%	487	-45.05%	-1618%	431	-19.20%	-206%	129
8	-25.32%	-671%	318	-17.12%	-856%	600	-20.31%	-758%	448	-44.62%	-1580%	425	-19.20%	-206%	129
9	-24.54%	-601%	294	-16.40%	-782%	572	-26.81%	-878%	393	-44.73%	-1580%	424	-19.20%	-206%	129
10	-20.52%	-458%	268	-15.66%	-734%	562	-26.81%	-878%	393	-48.26%	-1609%	400	-19.49%	-190%	117
11	-20.52%	-458%	268	-17.08%	-736%	517	-31.44%	-778%	297	-47.36%	-1547%	392	-16.93%	-138%	98
12	-16.35%	-280%	219	-12.91%	-425%	395	-33.98%	-782%	276	-47.36%	-1547%	392	-16.93%	-138%	98
13	-18.11%	-282%	187	-14.08%	-431%	367	-35.45%	-727%	246	-50.52%	-1335%	317	-19.12%	-151%	95
14	-18.11%	-282%	187	-14.08%	-431%	367	-35.64%	-695%	234	-59.47%	-1165%	235	-11.87%	-80%	81
15	-21.49%	-292%	163	-11.69%	-336%	345	-35.52%	-687%	232	-59.44%	-1115%	225	-12.48%	-82%	79
16	-17.34%	-220%	152	-12.17%	-349%	344	-35.81%	-686%	230	-59.38%	-1019%	206	-10.63%	-67%	76
17	-17.34%	-220%	152	-12.17%	-349%	344	-35.51%	-678%	229	-54.47%	-853%	188	-4.24%	-21%	59
18	-7.20%	-80%	133	-12.28%	-347%	339	-35.51%	-678%	229	-54.96%	-765%	167	13.42%	49%	44
19	-8.17%	-87%	127	-13.07%	-311%	286	-36.95%	-650%	211	-55.79%	-744%	160	13.42%	49%	44
20	-12.22%	-108%	106	-12.06%	-251%	250	-34.58%	-599%	208	-55.79%	-744%	160	13.42%	49%	44
21	-12.22%	-108%	106	-12.06%	-251%	250	-34.58%	-599%	208	-61.16%	-669%	157	53.02%	102%	23
22	-15.19%	-115%	91	-10.73%	-208%	233	-32.32%	-550%	204	-61.16%	-669%	157	53.02%	102%	23
23	-15.19%	-115%	91	-6.99%	-129%	221	-35.60%	-534%	180	-51.16%	-669%	157	53.02%	102%	23
24	-15.19%	-115%	91	-6.99%	-129%	221	-35.60%	-534%	180	-50.08%	-634%	152	103.96%	139%	16
25	-1.11%	-8%	84	-3.23%	-55%	204	-35.60%	-534%	180	-50.08%	-634%	152	103.96%	139%	16
26	0.10%	1%	81	-0.97%	-15%	184	-31.11%	-399%	154	-52.30%	-615%	141	103.96%	139%	16
27	0.10%	1%	81	-0.54%	-8%	172	-8.86%	-87%	118	-52.30%	-615%	141	103.96%	139%	16
28	-3.89%	-24%	73	1.06%	12%	138	-9.10%	-67%	88	-50.36%	-541%	129	103.96%	139%	16
29	-3.89%	-24%	73	1.06%	12%	138	-12.53%	-71%	68	-50.28%	-447%	89	103.96%	139%	16
30	-3.89%	-24%	73	1.06%	12%	138	-12.53%	-71%	68	-79.31%	-436%	66	110.89%	139%	15
31	-2.13%	-11%	63	1.29%	11%	106	-3.25%	-17%	62	-77.90%	-240%	37	124.17%	83%	8
32	1.62%	7%	54	-0.52%	-4%	87	-4.95%	-22%	54	-77.90%	-240%	37	124.17%	83%	8
33	1.62%	7%	54	-0.52%	-4%	87	-10.05%	-43%	51	0.00%	0%	0	0.00%	0%	0
34	1.62%	7%	54	2.26%	16%	86	-12.05%	-40%	40	0.00%	0%	0	0.00%	0%	0
35	1.91%	6%	37	4.17%	27%	79	-12.05%	-40%	40	0.00%	0%	0	0.00%	0%	0
36	3.36%	9%	31	2.63%	16%	73	-12.05%	-40%	40	0.00%	0%	0	0.00%	0%	0
37	43.83%	26%	7	1.28%	6%	61	-12.05%	-40%	40	0.00%	0%	0	0.00%	0%	0
38	43.83%	26%	7	1.28%	6%	61	-17.17%	-40%	28	0.00%	0%	0	0.00%	0%	0
39	94.48%	8%	1	7.88%	28%	43	-17.17%	-40%	28	0.00%	0%	0	0.00%	0%	0
40	94.48%	8%	1	8.57%	30%	42	-24.99%	-35%	17	0.00%	0%	0	0.00%	0%	0
41	94.48%	8%	1	4.49%	12%	31	-58.85%	-20%	4	0.00%	0%	0	0.00%	0%	0
42	0.00%	0%	0	8.97%	15%	20	-58.85%	-20%	4	0.00%	0%	0	0.00%	0%	0

Appendix E.2. Results for static comparison level tests

Continued: Comparison level = 10 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.1	1	6.90	0.0000	MTB	≥	3.5800	17.82	16.46%	77	1.88%	30.21%	0.00	-0.29
0.1	2	8.84	0.0000	AGE	≤	4.8667	5.93	5.55%	35	-21.72%	26.35%	-0.67	-1.22
0.1	3	9.28	0.0000	DY	≤	0.0452	5.25	4.91%	35	-27.14%	27.11%	-0.97	-1.39
0.1	4	9.26	0.0000	EY	≤	0.1465	5.12	4.78%	33	-28.40%	27.99%	-0.98	-1.39
0.1	5	9.09	0.0000	MAXP_12	≤	1.0428	5.10	4.77%	32	-28.03%	27.98%	-0.94	-1.38
0.1	6	8.90	0.0000	EPS	≤	1.3800	4.85	4.53%	28	-27.02%	27.92%	-0.86	-1.34
0.1	7	8.64	0.0000	MAXP_24	≤	0.9984	4.78	4.47%	28	-27.96%	27.85%	-0.91	-1.38
0.1	8	8.30	0.0000	SALEStCASH	≤	24.8555	4.52	4.22%	28	-31.75%	29.76%	-1.02	-1.42
0.1	9	7.88	0.0000	ACCtTA(-9m)	≤	0.0683	3.78	3.54%	23	-30.12%	28.50%	-0.98	-1.43
0.1	10	7.70	0.0000	SALEStCASH(-9m)	≤	8.1046	3.43	3.21%	23	-34.26%	24.54%	-1.69	-1.83
0.1	11	7.20	0.0000	RSTRENGTH_ALSI	≤	0.8284	3.02	2.82%	21	-34.68%	23.27%	-1.90	-1.94
0.1	12	7.15	0.0000	MOM_12	≤	0.5352	3.00	2.80%	20	-34.32%	23.75%	-1.76	-1.89
0.1	13	6.93	0.0000	WRSTRENGTH_ALSI	≤	0.7347	2.90	2.71%	18	-32.89%	27.37%	-1.20	-1.59
0.1	14	6.59	0.0000	POS_SALES	≤	13.0000	2.62	2.45%	18	-32.79%	28.50%	-1.08	-1.52
0.1	15	6.53	0.0000	POS_NET(-9m)	≥	5.0000	2.55	2.38%	18	-32.94%	28.56%	-1.08	-1.52
0.1	16	6.48	0.0000	ACCtTA(-12m)	≤	0.0210	2.53	2.37%	17	-32.44%	27.98%	-1.07	-1.54
0.1	17	6.31	0.0000	SALEStCASH(-12m)	≤	8.5499	2.30	2.15%	17	-33.88%	28.00%	-1.15	-1.59
0.1	18	6.13	0.0000	POS_NET(-12m)	≥	5.0000	2.25	2.10%	16	-33.62%	28.53%	-1.08	-1.55
0.1	19	5.68	0.0000	CH_TA	≥	-0.1104	2.12	1.98%	16	-37.44%	28.96%	-1.28	-1.66
0.1	20	4.86	0.0000	CH_EBTtSALES	≥	-0.1468	1.73	1.62%	6	-26.25%	28.19%	-0.66	-1.31
0.1	21	4.27	0.0000	ROE	≥	0.0642	1.38	1.29%	6	-36.74%	31.31%	-1.03	-1.51
0.1	22	4.09	0.0000	POS_ROE	≤	17.0000	1.30	1.21%	6	-37.85%	32.18%	-1.02	-1.50
0.1	23	3.38	0.0004	VOL_12	≤	0.8476	1.05	0.98%	4	-37.86%	35.47%	-0.83	-1.36
0.1	24	3.26	0.0006	VOL_6	≤	0.8813	1.03	0.97%	4	-38.26%	36.12%	-0.81	-1.35
0.1	25	2.75	0.0030	MOM_18	≤	0.3589	0.77	0.72%	3	-39.80%	35.95%	-0.87	-1.40
0.1	26	2.45	0.0072	CH_TA(-9m)	≥	-0.0623	0.70	0.65%	2	-40.18%	57.40%	-0.35	-0.89
0.1	27	2.28	0.0113	SDEV_VOL(-9m)	≤	0.6368	0.50	0.47%	1	-37.64%	59.74%	-0.28	-0.81
0.1	28	2.10	0.0180	CH_ASSTURN	≤	-0.0567	0.48	0.45%	1	-38.60%	60.27%	-0.28	-0.82
0.1	29	1.89	0.0296	EARNG_12(-9m)	≥	-0.0180	0.47	0.44%	1	-39.52%	61.68%	-0.28	-0.82
0.1	30	1.64	0.0502	CH_SAlSALES(-9m)	≥	-0.7636	0.27	0.25%	0	-25.87%	27.12%	-0.61	-1.36
0.1	31	1.34	0.0907	VOL_12(-9m)	≤	0.9879	0.23	0.22%	0	-21.22%	28.18%	-0.38	-1.15
0.1	32	0.89	0.1856	MOM_24	≤	0.2214	0.22	0.20%	0	-21.62%	29.33%	-0.36	-1.13

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-37.26%	-2009%	647	-11.66%	-808%	832	-31.89%	-773%	291	38.87%	146%	45	5.95%	34%	69
3	-40.71%	-1971%	581	-18.68%	-1094%	703	-39.46%	-845%	257	55.74%	158%	34	5.95%	34%	69
4	-40.24%	-1841%	549	-18.45%	-1075%	699	-39.46%	-845%	257	37.76%	44%	14	22.25%	54%	29
5	-40.34%	-1714%	510	-18.13%	-1042%	690	-39.46%	-845%	257	37.76%	44%	14	22.25%	54%	29
6	-37.21%	-1464%	472	-18.67%	-1058%	680	-39.46%	-845%	257	37.76%	44%	14	22.25%	54%	29
7	-38.74%	-1424%	441	-18.92%	-1011%	641	-39.36%	-836%	255	37.76%	44%	14	27.96%	40%	17
8	-45.75%	-1399%	367	-21.28%	-1070%	603	-46.71%	-821%	211	37.76%	44%	14	27.96%	40%	17
9	-40.65%	-932%	275	-21.06%	-1009%	575	-46.71%	-821%	211	28.94%	31%	13	39.60%	20%	6
10	-47.16%	-998%	254	-22.70%	-929%	491	-45.76%	-793%	208	-36.05%	-21%	7	0.00%	0%	0
11	-52.00%	-832%	192	-21.66%	-781%	433	-45.76%	-793%	208	-36.05%	-21%	7	0.00%	0%	0
12	-50.37%	-760%	181	-22.06%	-794%	432	-45.76%	-793%	208	-36.05%	-21%	7	0.00%	0%	0
13	-44.90%	-569%	152	-21.94%	-755%	413	-45.76%	-793%	208	-36.05%	-21%	7	0.00%	0%	0
14	-51.16%	-469%	110	-20.42%	-652%	383	-45.76%	-793%	208	-36.05%	-21%	7	0.00%	0%	0
15	-52.54%	-455%	104	-20.40%	-641%	377	-45.76%	-793%	208	-36.05%	-21%	7	0.00%	0%	0
16	-51.35%	-407%	95	-20.16%	-628%	374	-45.76%	-793%	208	-36.05%	-21%	7	0.00%	0%	0
17	-51.35%	-407%	95	-22.89%	-668%	350	-44.97%	-734%	196	-36.05%	-21%	7	0.00%	0%	0
18	-48.80%	-354%	87	-22.56%	-605%	322	-44.97%	-734%	196	-36.05%	-21%	7	0.00%	0%	0
19	-48.80%	-354%	87	-25.50%	-595%	280	-52.80%	-678%	154	-36.05%	-21%	7	0.00%	0%	0
20	-36.54%	-189%	62	-26.12%	-514%	236	-18.83%	-143%	91	-36.05%	-21%	7	0.00%	0%	0
21	-90.54%	-226%	30	-36.64%	-492%	161	-19.04%	-143%	90	-36.05%	-21%	7	0.00%	0%	0
22	-90.54%	-226%	30	-36.64%	-492%	161	-18.88%	-115%	73	0.00%	0%	0	0.00%	0%	0
23	-98.85%	-115%	14	-39.35%	-348%	106	-20.99%	-105%	60	0.00%	0%	0	0.00%	0%	0
24	-98.85%	-115%	14	-40.26%	-315%	94	-20.99%	-105%	60	0.00%	0%	0	0.00%	0%	0
25	-207.03%	-52%	3	-44.09%	-231%	63	-25.51%	-115%	54	0.00%	0%	0	0.00%	0%	0
26	-207.03%	-52%	3	-57.21%	-195%	41	-17.13%	-74%	52	0.00%	0%	0	0.00%	0%	0
27	-207.03%	-52%	3	-68.15%	-187%	33	-6.07%	-24%	48	0.00%	0%	0	0.00%	0%	0
28	-207.03%	-52%	3	-73.93%	-160%	26	-5.48%	-20%	43	0.00%	0%	0	0.00%	0%	0
29	-207.03%	-52%	3	-80.16%	-134%	20	-3.97%	-12%	37	0.00%	0%	0	0.00%	0%	0
30	0.00%	0%	0	-99.54%	-91%	11	-3.97%	-12%	37	0.00%	0%	0	0.00%	0%	0
31	0.00%	0%	0	-126.07%	-63%	6	-0.24%	-1%	30	0.00%	0%	0	0.00%	0%	0
32	0.00%	0%	0	-162.88%	-41%	3	-1.44%	-3%	21	0.00%	0%	0	0.00%	0%	0

Appendix E.2. Results for static comparison level tests

Continued: Comparison level = 5 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.05	1	4.88	0.0000	MTB	≥ 3.5800	17.62	16.46%	77	1.88%	30.21%	0.00	-0.29
0.05	2	8.13	0.0000	CH_DEP	≥ 0.3359	6.83	6.39%	33	-23.03%	27.80%	-0.67	-1.22
0.05	3	9.07	0.0000	INVITA	≤ 0.1952	5.88	5.50%	30	-27.73%	27.29%	-0.99	-1.41
0.05	4	9.13	0.0000	EY	≤ 0.1633	5.87	5.48%	30	-28.13%	27.38%	-1.00	-1.43
0.05	5	8.99	0.0000	POS_ROE	≤ 17.0000	5.45	5.09%	29	-27.66%	27.13%	-0.97	-1.42
0.05	6	8.83	0.0000	INVITA(-12m)	≤ 0.1681	5.32	4.97%	29	-28.67%	27.40%	-1.01	-1.44
0.05	7	8.62	0.0000	ACCITA(-12m)	≤ 0.0637	5.05	4.72%	29	-29.10%	27.90%	-0.99	-1.44
0.05	8	8.48	0.0000	INVITA(-9m)	≤ 0.1674	4.98	4.66%	29	-29.81%	28.47%	-0.98	-1.43
0.05	9	8.33	0.0000	ACCITA(-9m)	≤ 0.0683	4.93	4.61%	27	-28.80%	28.28%	-0.91	-1.41
0.05	10	8.10	0.0000	CH_ARISALES	≥ -0.2913	4.67	4.36%	26	-28.97%	29.89%	-0.82	-1.34
0.05	11	7.96	0.0000	POS_SALES	≤ 11.0000	4.55	4.25%	26	-30.70%	30.15%	-0.89	-1.39
0.05	12	7.73	0.0000	WRSTRENGTH_ALSI(-9m)	≥ 0.1548	4.32	4.03%	23	-30.34%	30.47%	-0.84	-1.36
0.05	13	7.57	0.0000	GM	≤ 0.3046	3.05	2.85%	21	-34.71%	32.93%	-0.92	-1.40
0.05	14	7.47	0.0000	DY	≤ 0.0402	2.98	2.79%	21	-35.13%	36.20%	-0.77	-1.28
0.05	15	7.32	0.0000	MAXP_24	≤ 0.9984	2.97	2.77%	20	-34.64%	35.76%	-0.76	-1.28
0.05	16	7.16	0.0000	MAXP_12	≤ 0.9943	2.95	2.76%	18	-34.04%	35.53%	-0.73	-1.27
0.05	17	6.84	0.0000	POS_NET(-9m)	≥ 5.0000	2.60	2.43%	16	-32.72%	34.16%	-0.72	-1.29
0.05	18	6.56	0.0000	POS_NET(-12m)	≥ 5.0000	2.50	2.34%	14	-32.17%	34.57%	-0.67	-1.26
0.05	19	6.27	0.0000	CH_ARISALES(-12m)	≥ -0.0765	2.20	2.06%	12	-31.31%	35.25%	-0.61	-1.21
0.05	20	5.96	0.0000	CH_DEP(-9m)	≥ -0.2972	2.10	1.96%	9	-28.27%	33.66%	-0.54	-1.18
0.05	21	5.77	0.0000	SALESTCASH	≤ 21.3249	1.87	1.74%	9	-29.35%	29.64%	-0.73	-1.38
0.05	22	5.64	0.0000	CH_ASSTURN	≤ 0.0434	1.65	1.54%	9	-30.27%	35.27%	-0.55	-1.19
0.05	23	5.37	0.0000	POS_SALES(-12m)	≥ 2.0000	1.40	1.31%	5	-25.03%	37.01%	-0.33	-0.99
0.05	24	5.15	0.0000	MOM_6(-12m)	≥ -0.1273	1.37	1.28%	3	-21.84%	36.59%	-0.26	-0.92
0.05	25	4.93	0.0000	ROE	≥ 0.0642	1.13	1.06%	0	-15.97%	35.93%	-0.14	-0.77
0.05	26	4.69	0.0000	CH_ARISALES	≥ 0.1343	0.90	0.84%	0	-14.77%	24.73%	-0.25	-1.08
0.05	27	4.27	0.0000	CH_ARISALES(-6m)	≥ -0.2181	0.80	0.75%	0	-15.91%	25.41%	-0.27	-1.11
0.05	28	4.00	0.0001	CH_ARISALES(-9m)	≥ -0.2721	0.75	0.70%	0	-17.04%	26.06%	-0.30	-1.13
0.05	29	3.70	0.0001	CH_TA	≥ -0.1104	0.70	0.65%	0	-17.20%	26.64%	-0.28	-1.11
0.05	30	3.26	0.0006	REVISION_12(-12m)	≤ 0.1504	0.65	0.61%	0	-17.10%	25.12%	-0.31	-1.19
0.05	31	3.02	0.0013	CH_DPS	≤ 0.2767	0.58	0.55%	0	-18.18%	24.79%	-0.36	-1.25
0.05	32	2.75	0.0030	AGE	≤ 7.4778	0.37	0.34%	0	-17.88%	25.52%	-0.32	-1.20
0.05	33	2.61	0.0046	MOM_24	≤ 0.0362	0.37	0.34%	0	-16.70%	25.52%	-0.28	-1.15
0.05	34	2.45	0.0072	WRSTRENGTH_ALSI	≤ 0.3486	0.37	0.34%	0	-15.17%	25.52%	-0.23	-1.08
0.05	35	2.10	0.0180	RSTRENGTH_ALSI	≤ 0.2773	0.37	0.34%	0	-14.45%	25.52%	-0.20	-1.05
0.05	36	1.89	0.0296	VOL_12	≤ 0.9332	0.35	0.33%	0	-13.46%	24.56%	-0.19	-1.05
0.05	37	1.64	0.0502	VOL_6	≤ 0.6547	0.27	0.25%	0	-9.29%	24.92%	-0.09	-0.86
0.05	38	1.34	0.0907	MAN_OWN(-6m)	≤ 0.7100	0.25	0.23%	0	-7.92%	25.47%	-0.06	-0.77
0.05	39	0.89	0.1856	VOL_12(-9m)	≤ 0.8271	0.25	0.23%	0	-6.48%	25.47%	-0.04	-0.72

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.76%	1680%	886
2	-50.71%	-1487%	352	-5.68%	-222%	470	-20.10%	-600%	358	-26.06%	-945%	435	-11.55%	-155%	161
3	-46.89%	-1176%	301	-16.30%	-469%	345	-25.83%	-723%	336	-31.74%	-1074%	406	-10.18%	-136%	160
4	-46.89%	-1176%	301	-16.30%	-469%	345	-25.83%	-723%	336	-32.91%	-1086%	396	-11.18%	-147%	158
5	-45.73%	-1128%	296	-16.38%	-418%	326	-25.83%	-723%	336	-32.91%	-1086%	396	-8.41%	-102%	146
6	-47.42%	-1098%	278	-18.22%	-433%	285	-25.81%	-721%	335	-32.91%	-1086%	396	-8.41%	-102%	146
7	-50.23%	-975%	233	-20.56%	-462%	270	-25.81%	-721%	335	-32.91%	-1086%	396	-8.41%	-102%	146
8	-55.03%	-913%	199	-22.86%	-488%	256	-25.81%	-721%	335	-32.91%	-1086%	396	-8.41%	-102%	146
9	-56.51%	-867%	184	-17.08%	-335%	235	-25.81%	-721%	335	-32.91%	-1086%	396	-8.41%	-102%	146
10	-54.63%	-797%	175	-17.13%	-331%	232	-25.81%	-721%	335	-33.12%	-1076%	390	-6.87%	-60%	104
11	-54.63%	-797%	175	-17.13%	-331%	232	-25.81%	-721%	335	-38.96%	-1107%	341	-3.40%	-23%	81
12	-53.91%	-701%	156	-16.42%	-311%	227	-26.45%	-729%	331	-38.63%	-1059%	329	1.80%	9%	61
13	-49.67%	-559%	135	-22.40%	-396%	212	-33.93%	-704%	249	-43.94%	-1047%	286	26.94%	67%	30
14	-49.67%	-559%	135	-22.40%	-396%	212	-33.93%	-704%	249	-46.69%	-1062%	273	76.64%	121%	19
15	-48.03%	-460%	115	-21.87%	-379%	208	-33.76%	-692%	246	-47.69%	-1049%	264	76.64%	121%	19
16	-48.03%	-460%	115	-21.96%	-368%	201	-34.89%	-680%	234	-45.05%	-927%	247	76.64%	121%	19
17	-37.44%	-215%	69	-22.44%	-327%	175	-34.89%	-680%	234	-45.05%	-927%	247	76.64%	121%	19
18	-31.96%	-154%	58	-21.34%	-245%	138	-35.86%	-684%	229	-43.55%	-871%	240	76.64%	121%	19
19	-28.99%	-126%	52	-22.30%	-169%	91	-31.56%	-584%	222	-43.55%	-871%	240	76.64%	121%	19
20	-28.99%	-126%	52	-22.30%	-169%	91	-33.40%	-604%	217	-34.10%	-534%	188	78.12%	104%	16
21	-28.99%	-126%	52	-22.30%	-169%	91	-33.40%	-604%	217	-27.46%	-375%	164	-51.79%	-17%	4
22	-37.86%	-98%	31	-24.13%	-177%	88	-33.40%	-604%	217	-27.46%	-375%	164	-51.79%	-17%	4
23	4.82%	10%	24	-17.97%	-90%	60	-28.16%	-479%	204	-27.46%	-375%	164	-51.79%	-17%	4
24	4.82%	10%	24	-16.78%	-78%	56	-21.18%	-323%	183	-27.88%	-355%	153	-51.79%	-17%	4
25	4.82%	10%	24	-19.00%	-79%	50	-5.40%	-69%	153	-27.88%	-355%	153	-51.79%	-17%	4
26	0.00%	0%	0	4.23%	13%	38	-5.40%	-69%	153	-27.88%	-355%	153	-51.79%	-17%	4
27	0.00%	0%	0	41.48%	21%	6	-2.86%	-30%	125	-27.88%	-355%	153	-51.79%	-17%	4
28	0.00%	0%	0	0.00%	0%	0	1.89%	15%	95	-27.88%	-355%	153	-51.79%	-17%	4
29	0.00%	0%	0	0.00%	0%	0	6.36%	33%	62	-26.01%	-325%	150	-51.79%	-17%	4
30	0.00%	0%	0	0.00%	0%	0	7.68%	37%	58	-30.44%	-276%	109	0.00%	0%	1
31	0.00%	0%	0	0.00%	0%	0	2.61%	12%	55	-31.39%	-230%	88	0.00%	0%	1
32	0.00%	0%	0	0.00%	0%	0	-0.13%	0%	44	-28.53%	-178%	75	0.00%	0%	1
33	0.00%	0%	0	0.00%	0%	0	3.41%	11%	37	-27.66%	-161%	70	0.00%	0%	1
34	0.00%	0%	0	0.00%	0%	0	7.89%	20%	31	-26.57%	-142%	64	0.00%	0%	1
35	0.00%	0%	0	0.00%	0%	0	12.57%	23%	22	-26.88%	-110%	49	0.00%	0%	1
36	0.00%	0%	0	0.00%	0%	0	13.24%	14%	13	-21.30%	-82%	46	0.00%	0%	1
37	0.00%	0%	0	0.00%	0%	0	40.35%	17%	5	-15.42%	-54%	42	0.00%	0%	1
38	0.00%	0%	0	0.00%	0%	0	36.48%	6%	2	-10.85%	-30%	33	0.00%	0%	1
39	0.00%	0%	0	0.00%	0%	0	36.48%	6%	2	-10.88%	-19%	21	0.00%	0%	1

Appendix E.2. Results for static comparison level tests

Continued: Comparison level = 0 and −5 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0	1	2.59	0.0048	MTB	≥	3.5800	17.62	18.46%	77	1.88%	30.21%	0.00	-0.29
0	2	7.35	0.0000	CH_DEP	≥	0.3359	6.83	6.39%	33	-23.03%	27.80%	-0.67	-1.22
0	3	8.57	0.0000	INVITA	≤	0.1952	5.88	5.50%	30	-27.73%	27.29%	-0.99	-1.41
0	4	8.78	0.0000	EY	≤	0.1297	5.67	5.30%	30	-30.00%	28.26%	-1.07	-1.44
0	5	8.66	0.0000	INVITA(-12m)	≤	0.1681	5.53	5.17%	30	-31.16%	28.64%	-1.10	-1.47
0	6	8.52	0.0000	POS_ROE	≤	17.0000	5.12	4.78%	29	-30.71%	28.26%	-1.09	-1.47
0	7	8.38	0.0000	POS_SALES	≤	13.0000	4.95	4.63%	29	-32.95%	29.27%	-1.15	-1.50
0	8	8.28	0.0000	CH_ARISALES	≥	-0.2913	4.73	4.42%	28	-32.75%	30.31%	-1.04	-1.44
0	9	8.10	0.0000	ACCITA(-12m)	≤	0.0637	4.47	4.17%	28	-33.48%	30.80%	-1.04	-1.45
0	10	7.96	0.0000	INVITA(-9m)	≤	0.1674	4.40	4.11%	28	-34.53%	31.33%	-1.05	-1.45
0	11	7.81	0.0000	ACCITA(-9m)	≤	0.0683	4.35	4.07%	26	-33.45%	31.17%	-0.98	-1.43
0	12	7.60	0.0000	WRSTRENGTH_ALSI(-9m)	≥	0.1548	4.12	3.85%	23	-33.21%	31.55%	-0.93	-1.41
0	13	7.42	0.0000	DY	≤	0.0452	3.37	3.15%	23	-37.13%	34.19%	-0.98	-1.41
0	14	7.27	0.0000	MAXP_24	≤	0.9984	3.35	3.13%	22	-36.73%	33.86%	-0.96	-1.41
0	15	7.11	0.0000	MAXP_12	≤	0.9943	3.33	3.12%	20	-36.21%	33.61%	-0.94	-1.41
0	16	6.95	0.0000	GM	≤	0.3046	2.92	2.73%	18	-35.61%	33.84%	-0.88	-1.38
0	17	6.62	0.0000	POS_NET(-9m)	≥	5.0000	2.57	2.40%	16	-34.37%	32.54%	-0.88	-1.40
0	18	6.33	0.0000	POS_NET(-12m)	≥	5.0000	2.47	2.31%	14	-33.93%	32.97%	-0.82	-1.37
0	19	6.03	0.0000	MOM_6(-12m)	≥	-0.1273	2.43	2.27%	9	-29.27%	31.89%	-0.65	-1.27
0	20	5.77	0.0000	ROE	≥	0.0642	2.32	2.17%	5	-24.67%	30.95%	-0.48	-1.16
0	21	5.44	0.0000	CH_ARISALES(-12m)	≥	-0.0765	1.85	1.73%	3	-22.57%	31.54%	-0.38	-1.07
0	22	5.15	0.0000	CH_DEP(-9m)	≥	-0.2972	1.75	1.64%	1	-18.30%	29.83%	-0.28	-0.99
0	23	4.93	0.0000	SALESICASH	≤	21.3249	1.52	1.42%	1	-18.84%	29.90%	-0.29	-1.01
0	24	4.85	0.0000	CH_ARISALES	≥	-0.0689	1.50	1.40%	1	-18.61%	29.48%	-0.29	-1.02
0	25	4.77	0.0000	CH_ARISALES(-6m)	≥	-0.3717	1.30	1.21%	0	-16.33%	32.25%	-0.18	-0.86
0	26	4.61	0.0000	CH_ASSTURN	≤	0.0434	1.08	1.01%	0	-16.78%	37.17%	-0.14	-0.76
0	27	4.53	0.0000	CH_ARISALES(-9m)	≥	0.1440	1.03	0.97%	0	-16.92%	37.07%	-0.15	-0.77
0	28	4.27	0.0000	POS_SALES(-12m)	≥	4.0000	0.80	0.75%	0	-15.58%	26.92%	-0.23	-1.02
0	29	3.80	0.0001	EARNG_12(-6m)	≥	-0.0049	0.70	0.65%	0	-15.54%	26.51%	-0.23	-1.02
0	30	3.70	0.0001	RSTRENGTH_ALSI	≤	0.8284	0.68	0.64%	0	-15.39%	26.24%	-0.23	-1.03
0	31	3.60	0.0002	MOM_12	≤	0.1140	0.67	0.62%	0	-15.34%	25.86%	-0.23	-1.04
0	32	3.49	0.0003	AGE	≤	6.1722	0.47	0.44%	0	-15.20%	24.78%	-0.25	-1.09
0	33	3.38	0.0004	MOM_18	≤	0.3589	0.47	0.44%	0	-15.65%	24.78%	-0.26	-1.11
0	34	3.26	0.0006	CH_DPS	≤	0.2767	0.42	0.39%	0	-15.67%	24.62%	-0.26	-1.12
0	35	3.14	0.0009	WRSTRENGTH_ALSI	≤	0.4038	0.42	0.39%	0	-14.65%	24.62%	-0.23	-1.08
0	36	2.89	0.0020	MOM_24	≤	0.2214	0.42	0.39%	0	-15.76%	24.62%	-0.26	-1.13
0	37	2.61	0.0046	EARNG_24	≤	0.0423	0.42	0.39%	0	-17.42%	24.62%	-0.31	-1.20
0	38	2.28	0.0113	CH_ASSTURN(-6m)	≤	-0.1343	0.32	0.30%	0	-20.56%	26.74%	-0.37	-1.24
0	39	1.89	0.0296	VOL_12	≤	0.8476	0.28	0.26%	0	-21.39%	27.02%	-0.39	-1.26
0	40	1.64	0.0502	VOL_6	≤	0.6547	0.28	0.26%	0	-19.20%	27.02%	-0.31	-1.17
0	41	1.34	0.0907	VOL_6(-9m)	≤	1.6983	0.27	0.25%	0	-22.50%	27.87%	-0.39	-1.26
0	42	0.89	0.1856	EARNG_12(-12m)	≥	0.0142	0.22	0.20%	0	-19.48%	27.34%	-0.30	-1.17

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-50.71%	-1487%	352	-5.68%	-222%	470	-20.10%	-600%	358	-26.06%	-945%	435	-11.55%	-155%	161
3	-46.89%	-1176%	301	-16.30%	-469%	345	-25.83%	-723%	336	-31.74%	-1074%	406	-10.18%	-136%	160
4	-46.89%	-1176%	301	-18.18%	-514%	339	-29.46%	-759%	309	-36.08%	-1004%	334	-11.25%	-147%	157
5	-48.62%	-1147%	283	-21.28%	-528%	298	-29.48%	-757%	308	-36.08%	-1004%	334	-11.25%	-147%	157
6	-47.42%	-1098%	278	-20.55%	-478%	279	-29.48%	-757%	308	-36.08%	-1004%	334	-8.46%	-102%	145
7	-47.42%	-1098%	278	-20.55%	-478%	279	-29.48%	-757%	308	-44.08%	-1025%	279	-4.77%	-37%	92
8	-45.88%	-1029%	269	-20.63%	-475%	276	-29.48%	-757%	308	-44.08%	-1025%	279	-3.44%	-23%	80
9	-48.51%	-905%	224	-23.18%	-504%	261	-29.48%	-757%	308	-44.08%	-1025%	279	-3.44%	-23%	80
10	-53.23%	-843%	190	-25.71%	-529%	247	-29.48%	-757%	308	-44.08%	-1025%	279	-3.44%	-23%	80
11	-54.63%	-797%	175	-19.98%	-376%	226	-29.48%	-757%	308	-44.08%	-1025%	279	-3.44%	-23%	80
12	-53.91%	-701%	156	-19.31%	-356%	221	-30.22%	-765%	304	-43.92%	-977%	267	1.83%	9%	60
13	-53.91%	-701%	156	-21.30%	-382%	215	-36.23%	-722%	239	-50.56%	-956%	227	15.28%	50%	39
14	-53.15%	-602%	136	-20.76%	-365%	211	-36.09%	-710%	236	-51.93%	-943%	218	15.28%	50%	39
15	-53.15%	-602%	136	-20.81%	-354%	204	-37.39%	-698%	224	-49.05%	-822%	201	15.28%	50%	39
16	-48.03%	-460%	115	-21.96%	-368%	201	-37.39%	-698%	224	-49.47%	-820%	199	27.87%	67%	29
17	-37.44%	-215%	69	-22.44%	-327%	175	-37.39%	-698%	224	-49.47%	-820%	199	27.87%	67%	29
18	-31.96%	-154%	58	-21.34%	-245%	138	-38.45%	-702%	219	-47.75%	-764%	192	27.87%	67%	29
19	-22.41%	-103%	55	-18.62%	-186%	120	-30.24%	-479%	190	-46.45%	-705%	182	27.87%	67%	29
20	-22.41%	-103%	55	-19.90%	-179%	108	-12.99%	-167%	154	-46.45%	-705%	182	27.87%	67%	29
21	-18.09%	-74%	49	-20.20%	-103%	61	-5.42%	-66%	147	-46.45%	-705%	182	27.87%	67%	29
22	-18.09%	-74%	49	-20.20%	-103%	61	-7.23%	-87%	144	-36.62%	-427%	140	23.15%	50%	26
23	-18.09%	-74%	49	-20.20%	-103%	61	-7.23%	-87%	144	-27.76%	-268%	116	-61.08%	-71%	14
24	-18.09%	-74%	49	-20.20%	-103%	61	-7.23%	-87%	144	-30.12%	-276%	110	-56.30%	-38%	8
25	-4.85%	-18%	45	-16.16%	-71%	53	-7.23%	-87%	144	-30.12%	-276%	110	-56.30%	-38%	8
26	4.82%	10%	24	-19.00%	-79%	50	-7.23%	-87%	144	-30.12%	-276%	110	-56.30%	-38%	8
27	4.82%	10%	24	-19.00%	-79%	50	-7.23%	-87%	144	-33.01%	-283%	103	-69.05%	-17%	3
28	0.00%	0%	0	4.23%	13%	38	-7.23%	-87%	144	-33.01%	-283%	103	-69.05%	-17%	3
29	0.00%	0%	0	4.23%	13%	38	-11.44%	-120%	126	-33.70%	-171%	61	-69.05%	-17%	3
30	0.00%	0%	0	4.23%	13%	38	-11.44%	-120%	126	-37.46%	-153%	49	-69.05%	-17%	3
31	0.00%	0%	0	4.23%	13%	38	-11.44%	-120%	126	-44.51%	-141%	38	-78.77%	-13%	2
32	0.00%	0%	0	4.23%	13%	38	-11.44%	-120%	126	-58.50%	-137%	28	0.00%	0%	0
33	0.00%	0%	0	6.02%	15%	30	-11.14%	-113%	122	-58.50%	-137%	28	0.00%	0%	0
34	0.00%	0%	0	7.76%	14%	21	-9.73%	-96%	119	-58.50%	-137%	28	0.00%	0%	0
35	0.00%	0%	0	7.76%	14%	21	-9.19%	-87%	113	-64.06%	-117%	22	0.00%	0%	0
36	0.00%	0%	0	-3.67%	-5%	16	-6.52%	-51%	94	-64.06%	-117%	22	0.00%	0%	0
37	0.00%	0%	0	-8.53%	-8%	11	-5.04%	-31%	75	-64.06%	-117%	22	0.00%	0%	0
38	0.00%	0%	0	0.00%	0%	0	-5.12%	-26%	62	-64.06%	-117%	22	0.00%	0%	0
39	0.00%	0%	0	0.00%	0%	0	-7.85%	-31%	48	-75.57%	-76%	12	0.00%	0%	0
40	0.00%	0%	0	0.00%	0%	0	-8.68%	-29%	40	-71.81%	-48%	8	0.00%	0%	0
41	0.00%	0%	0	0.00%	0%	0	-8.42%	-20%	28	-71.81%	-48%	8	0.00%	0%	0
42	0.00%	0%	0	0.00%	0%	0	-4.94%	-9%	21	-121.26%	-30%	3	0.00%	0%	0

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
-0.05	1	0.20	0.4213	SALESICASH(-12m)	≤	0.4647	3.05	2.85%	9	8.01%	31.74%	0.06	-0.09
-0.05	2	5.17	0.0000	CH_TA(-9m)	≥	0.3650	1.55	1.45%	9	-31.97%	35.72%	-0.78	-1.19
-0.05	3	5.41	0.0000	CH_TA	≥	-0.1104	1.40	1.31%	9	-40.95%	35.68%	-1.26	-1.45
-0.05	4	5.26	0.0000	MAXP_24	≤	0.9431	1.37	1.28%	9	-41.34%	36.41%	-1.21	-1.43
-0.05	5	5.19	0.0000	MAXP_12	≤	0.9457	1.35	1.26%	8	-41.06%	36.17%	-1.20	-1.43
-0.05	6	5.04	0.0000	CH_DEP	≥	-0.1744	1.13	1.06%	8	-41.20%	35.68%	-1.22	-1.45
-0.05	7	4.88	0.0000	CH_DEP(-12m)	≥	-0.3409	1.10	1.03%	6	-39.82%	35.46%	-1.14	-1.42
-0.05	8	4.75	0.0000	CH_TA(-12m)	≥	0.0866	0.87	0.81%	6	-43.45%	38.78%	-1.11	-1.39
-0.05	9	4.50	0.0000	WRSTRENGTH_ALSI(-9m)	≥	0.2764	0.83	0.78%	5	-44.16%	39.16%	-1.11	-1.39
-0.05	10	4.15	0.0000	MTB	≥	0.6200	0.82	0.76%	5	-45.44%	40.19%	-1.10	-1.39
-0.05	11	3.80	0.0001	SDEV_VOL(-9m)	≤	0.6368	0.73	0.68%	5	-47.94%	40.35%	-1.20	-1.45
-0.05	12	3.60	0.0002	AGE	≤	11.3944	0.68	0.64%	5	-48.46%	42.23%	-1.11	-1.40
-0.05	13	3.38	0.0004	VOL_12(-9m)	≤	1.3094	0.68	0.64%	4	-48.72%	42.32%	-1.10	-1.40
-0.05	14	3.14	0.0009	MOM_6(-12m)	≥	-0.1273	0.68	0.64%	4	-49.29%	43.45%	-1.05	-1.38
-0.05	15	3.02	0.0013	MOM_24	≤	0.9623	0.68	0.64%	3	-48.94%	43.50%	-1.02	-1.37
-0.05	16	2.75	0.0030	ACCITA(-9m)	≤	-0.1116	0.55	0.51%	3	-49.50%	48.84%	-0.82	-1.23
-0.05	17	2.45	0.0072	EY	≤	0.1633	0.50	0.47%	3	-53.09%	50.53%	-0.87	-1.26
-0.05	18	2.10	0.0180	DY	≤	0.0303	0.47	0.44%	3	-55.69%	49.39%	-0.99	-1.34
-0.05	19	1.64	0.0502	VOL_6	≤	0.6547	0.45	0.42%	2	-55.27%	51.84%	-0.87	-1.27
-0.05	20	1.34	0.0907	VOL_12	≤	0.4200	0.43	0.40%	1	-53.56%	48.44%	-1.01	-1.38
-0.05	21	0.89	0.1856	CH_ARISALES	≥	-0.2913	0.23	0.22%	0	-45.14%	44.40%	-0.77	-1.26

No	2000			2001			2002			2003			2004		
1	21.71%	516%	285	-17.65%	-852%	579	42.19%	1519%	432	-24.17%	-326%	162	25.92%	168%	78
2	-67.51%	-743%	132	-33.16%	-580%	210	-14.44%	-108%	90	-35.24%	-264%	90	23.51%	129%	66
3	-67.51%	-743%	132	-33.16%	-580%	210	-14.44%	-108%	90	-62.85%	-236%	45	115.88%	29%	3
4	-72.22%	-668%	111	-34.08%	-588%	207	-14.44%	-108%	90	-62.85%	-236%	45	115.88%	29%	3
5	-72.22%	-668%	111	-34.08%	-588%	207	-15.14%	-105%	83	-56.30%	-188%	40	115.88%	29%	3
6	-72.22%	-668%	111	-34.08%	-588%	207	-31.93%	-176%	66	-14.37%	-40%	33	115.88%	29%	3
7	-70.12%	-526%	90	-35.41%	-602%	204	-31.93%	-176%	66	-14.37%	-40%	33	115.88%	29%	3
8	-70.12%	-526%	90	-35.41%	-602%	204	-31.93%	-176%	66	0.00%	0%	0	0.00%	0%	0
9	-70.42%	-499%	85	-34.35%	-555%	194	-36.84%	-138%	45	0.00%	0%	0	0.00%	0%	0
10	-73.74%	-516%	84	-32.72%	-453%	166	-35.23%	-76%	26	0.00%	0%	0	0.00%	0%	0
11	-79.15%	-488%	74	-32.23%	-381%	142	-41.45%	-41%	12	0.00%	0%	0	0.00%	0%	0
12	-79.15%	-488%	74	-30.86%	-327%	127	-36.87%	-9%	3	0.00%	0%	0	0.00%	0%	0
13	-76.08%	-431%	68	-31.98%	-290%	109	-36.87%	-9%	3	0.00%	0%	0	0.00%	0%	0
14	-76.68%	-396%	62	-31.04%	-235%	91	-36.87%	-9%	3	0.00%	0%	0	0.00%	0%	0
15	-76.68%	-396%	62	-27.68%	-185%	80	-38.85%	-6%	2	0.00%	0%	0	0.00%	0%	0
16	-76.68%	-396%	62	-20.44%	-99%	58	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
17	-75.49%	-352%	56	-21.74%	-72%	40	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
18	-73.49%	-276%	45	-26.03%	-59%	27	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
19	-75.31%	-182%	29	-24.68%	-39%	19	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
20	-66.32%	-122%	22	-33.49%	-39%	14	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
21	-48.30%	-56%	14	-40.72%	-34%	10	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0

Appendix E.3. Results for dynamic comparison level tests

The tables below show the results from the stepwise median comparison test where the sample has been restricted to the period from 2000 until 2004. Each table that follows provides the results from this test while using a particular initial comparison level (ranging from 20 to -5 percent) and decreasing this comparison level to -50 percent within a prespecified length. This length is set at five filters for Part A of this appendix, ten filters for Part B and fifteen filters for Part C. The table shows the filtering variables and their corresponding filter levels as each subsequent filter is added. For each combination of filters the z-statistic from the Wilcoxon signed ranks test comparing the median return of the filtered portfolio to the relevant comparison level along with its p-value is shown. The tables also show the average number of companies held in any month over the period from 2000 until 2004, and the amount of companies held as a proportion of the entire sample. The number of losers picked out of a possible 223 insample losers is indicated. Finally, the tables show the average annual return and annualized standard deviation of monthly portfolio returns of each filtered portfolio over the period from January 2000 until December 2004, as well as the JK statistic and Sharpe ratio.

The tables below also show the calendar time payoffs corresponding to the each of these filters over the entire sample period from January 2000 until December 2004. For each sample year the total return earned by the filtered shares (second column of each year), the number of investment months included in the filtered portfolio (third column of each year) and the corresponding equally-weighted average return for that year are included (first column of each year).

Appendix E.3.A Results for dynamic comparison level tests: restricted sample

Continued: Length = five filters; Initial comparison level = 20 and 15 percent

Appendix E.3.A Results for dynamic comparison level tests: restricted sample

Continued: Length = five filters; Initial comparison level = 10 and 5 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.2	1	10.26	0.0000	MTB	≥	2.4700	28.42	26.56%	106	8.98%	23.73%	0.15	-0.07
0.06	2	8.37	0.0000	AGE	≤	3.5611	6.18	5.78%	54	-25.72%	29.60%	-0.74	-1.23
-0.08	3	7.92	0.0000	POS_OP	≤	15.0000	4.32	4.03%	54	-46.17%	41.34%	-1.20	-1.37
-0.22	4	6.96	0.0000	DY	≤	0.0253	4.03	3.77%	54	-54.16%	44.02%	-1.43	-1.47
-0.36	5	5.85	0.0000	EY	≤	0.1297	3.55	3.32%	51	-57.88%	39.50%	-2.00	-1.73
-0.5	6	4.61	0.0000	CH_ARISALES(-9m)	≥	0.0616	1.67	1.56%	34	-75.72%	43.67%	-2.75	-1.98
-0.5	7	5.10	0.0000	SALESTCASH	≤	10.7330	1.47	1.37%	34	-77.76%	45.02%	-2.69	-1.96
-0.5	8	5.03	0.0000	MAXP_24	≤	0.9431	1.47	1.37%	33	-78.21%	45.07%	-2.67	-1.97
-0.5	9	4.81	0.0000	EARNG_12(-6m)	≥	-0.0049	1.43	1.34%	30	-79.04%	45.10%	-2.69	-1.99
-0.5	10	4.69	0.0000	CH_DEP(-9m)	≥	0.3604	1.77	1.65%	29	-80.83%	46.49%	-2.61	-1.97
-0.5	11	4.44	0.0000	MAXP_12	≤	0.8486	1.40	1.31%	26	-81.32%	47.14%	-2.53	-1.95
-0.5	12	4.27	0.0000	EARNG_12(-9m)	≥	-0.0180	1.30	1.21%	24	-81.24%	45.08%	-2.73	-2.04
-0.5	13	4.18	0.0000	WRSTRENGTH_ALSI(-9m)	≥	0.2156	1.27	1.18%	23	-80.82%	46.46%	-2.51	-1.97
-0.5	14	4.00	0.0001	MOM_12	≤	0.5352	1.25	1.17%	21	-79.49%	43.70%	-2.70	-2.06
-0.5	15	3.90	0.0001	RSTRENGTH_ALSI	≤	0.7497	1.17	1.09%	20	-78.79%	43.08%	-2.70	-2.07
-0.5	16	3.70	0.0001	MOM_24	≤	0.9623	0.90	0.84%	18	-77.27%	47.51%	-2.11	-1.85
-0.5	17	3.60	0.0002	WRSTRENGTH_ALSI	≤	0.5141	0.88	0.83%	17	-77.51%	49.51%	-1.93	-1.78
-0.5	18	3.49	0.0003	MOM_18	≤	0.7251	0.83	0.78%	16	-78.07%	52.16%	-1.74	-1.70
-0.5	19	3.38	0.0004	CH_ARISALES	≥	-0.2913	0.63	0.59%	15	-78.58%	59.26%	-1.35	-1.50
-0.5	20	3.26	0.0006	CH_TA	≥	0.2322	0.60	0.56%	14	-77.85%	59.73%	-1.29	-1.48
-0.5	21	3.14	0.0009	POS_SALES	≤	7.0000	0.60	0.56%	13	-78.76%	59.81%	-1.30	-1.49
-0.5	22	2.89	0.0020	VOL_12(-9m)	≤	1.3094	0.58	0.55%	11	-79.20%	60.08%	-1.28	-1.50
-0.5	23	2.75	0.0030	VOL_6(-9m)	≤	1.6983	0.55	0.51%	10	-78.06%	59.53%	-1.26	-1.49
-0.5	24	2.45	0.0072	CH_ARISALES	≥	-0.1908	0.50	0.47%	8	-83.62%	59.76%	-1.41	-1.58
-0.5	25	2.28	0.0113	SDEV_VOL(-9m)	≤	1.0505	0.50	0.47%	7	-84.36%	59.76%	-1.42	-1.59
-0.5	26	1.89	0.0296	MOM_6(-12m)	≥	-0.1273	0.47	0.44%	5	-85.75%	60.44%	-1.42	-1.60
-0.5	27	1.64	0.0502	POS_NET(-12m)	≥	5.0000	0.43	0.40%	4	-85.07%	62.16%	-1.31	-1.55
-0.5	28	1.34	0.0907	CH_INV	≥	0.1292	0.23	0.22%	3	-84.42%	47.85%	-2.15	-2.00
-0.5	29	0.89	0.1856	EARNG_12(-12m)	≥	0.0142	0.22	0.20%	2	-82.49%	48.71%	-1.95	-1.92

No	2000			2001			2002			2003			2004		
1	-101.56%	-1706%	1939	-1.77%	-429%	2914	25.17%	5035%	2401	11.91%	2422%	2441	24.04%	3079%	1537
2	-45.25%	-2937%	779	-19.77%	-1495%	907	-31.43%	-830%	317	49.93%	528%	127	5.08%	28%	66
3	-58.81%	-2877%	587	-31.23%	-1548%	595	-102.02%	-910%	107	120.23%	130%	13	9.58%	34%	42
4	-66.92%	-2855%	512	-36.69%	-1443%	472	-101.64%	-855%	101	117.54%	118%	12	-0.28%	0%	19
5	-67.12%	-2713%	485	-37.97%	-1389%	439	-108.53%	-760%	84	0.00%	0%	0	0.00%	0%	0
6	-87.13%	-1292%	178	-50.47%	-732%	174	-106.24%	-702%	80	0.00%	0%	0	0.00%	0%	0
7	-87.13%	-1292%	178	-52.84%	-735%	167	-111.02%	-694%	75	0.00%	0%	0	0.00%	0%	0
8	-88.74%	-1235%	167	-52.78%	-730%	166	-111.02%	-694%	75	0.00%	0%	0	0.00%	0%	0
9	-92.42%	-1124%	146	-53.01%	-720%	163	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
10	-97.56%	-1049%	129	-53.04%	-690%	156	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
11	-101.59%	-838%	99	-53.65%	-671%	150	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
12	-113.36%	-775%	82	-47.79%	-569%	143	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
13	-114.04%	-703%	74	-47.48%	-550%	139	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
14	-114.30%	-629%	66	-42.44%	-435%	123	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
15	-116.34%	-601%	62	-38.62%	-369%	115	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
16	-123.28%	-555%	54	-27.93%	-230%	99	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
17	-129.29%	-485%	45	-28.39%	-227%	96	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
18	-142.26%	-415%	35	-29.19%	-229%	94	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
19	-155.42%	-350%	27	-29.80%	-223%	90	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
20	-168.04%	-280%	20	-28.83%	-204%	85	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
21	-168.04%	-280%	20	-29.80%	-196%	79	-115.28%	-548%	57	0.00%	0%	0	0.00%	0%	0
22	-161.16%	-228%	17	-29.92%	-152%	61	-109.06%	-491%	54	0.00%	0%	0	0.00%	0%	0
23	-153.11%	-191%	15	-23.16%	-98%	51	-109.06%	-491%	54	0.00%	0%	0	0.00%	0%	0
24	-153.11%	-191%	15	-29.68%	-89%	36	-103.60%	-389%	45	0.00%	0%	0	0.00%	0%	0
25	-153.11%	-191%	15	-29.07%	-78%	32	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
26	-149.67%	-125%	10	-29.92%	-50%	20	-101.66%	-254%	30	0.00%	0%	0	0.00%	0%	0
27	-167.01%	-56%	4	-26.12%	-30%	14	-101.66%	-254%	30	0.00%	0%	0	0.00%	0%	0
28	0.00%	0%	0	1.76%	1%	6	-101.66%	-254%	30	0.00%	0%	0	0.00%	0%	0
29	0.00%	0%	0	2.11%	1%	5	-104.76%	-166%	19	0.00%	0%	0	0.00%	0%	0

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.15	1	8.65	0.0000	MTB	≥	3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
0.02	2	7.69	0.0000	CH_DEP	≥	0.3359	6.73	6.29%	33	-23.03%	27.80%	-0.67	-1.22
-0.11	3	6.63	0.0000	INVITA	≤	0.0572	3.88	3.63%	28	-35.22%	31.16%	-1.23	-1.49
-0.24	4	4.87	0.0000	DY	≤	0.0203	2.80	2.62%	28	-50.24%	47.97%	-1.03	-1.28
-0.37	5	4.53	0.0000	ACCITA(-9m)	≤	-0.0396	1.60	1.50%	23	-69.31%	53.13%	-1.58	-1.51
-0.5	6	4.06	0.0000	CH_TA	≥	-0.1104	1.40	1.31%	23	-70.25%	52.89%	-1.61	-1.54
-0.5	7	4.04	0.0001	POS_ROE	≤	11.0000	1.18	1.11%	22	-71.99%	54.23%	-1.59	-1.54
-0.5	8	3.97	0.0001	WRSTRENGTH_ALSI(-9m)	≥	0.1548	1.18	1.11%	21	-72.57%	54.08%	-1.60	-1.55
-0.5	9	3.86	0.0001	CH_ARISALES	≥	-0.2913	1.17	1.09%	20	-72.54%	56.08%	-1.46	-1.49
-0.5	10	3.75	0.0001	POS_SALES	≤	7.0000	1.50	1.40%	19	-72.85%	56.16%	-1.45	-1.50
-0.5	11	3.64	0.0002	EARNG_12(-6m)	≥	-0.0049	1.25	1.17%	18	-72.08%	56.48%	-1.39	-1.48
-0.5	12	3.52	0.0002	POS_NET(-9m)	≥	5.0000	1.12	1.04%	17	-70.95%	56.66%	-1.32	-1.45
-0.5	13	3.44	0.0003	ACCITA(-12m)	≤	-0.1283	1.07	1.00%	16	-71.67%	57.35%	-1.29	-1.45
-0.5	14	3.31	0.0005	MAXP_24	≤	0.8877	1.05	0.98%	15	-72.38%	58.76%	-1.24	-1.43
-0.5	15	3.27	0.0006	MOM_18	≤	0.3589	0.85	0.79%	14	-74.75%	64.31%	-1.09	-1.34
-0.5	16	3.14	0.0009	MOM_12	≤	0.5352	0.85	0.79%	13	-75.82%	64.19%	-1.11	-1.36
-0.5	17	3.01	0.0014	RSTRENGTH_ALSI	≤	0.6710	0.85	0.79%	12	-75.72%	64.19%	-1.09	-1.35
-0.5	18	2.86	0.0021	MAXP_12	≤	0.9457	0.83	0.78%	11	-77.16%	64.04%	-1.13	-1.38
-0.5	19	2.80	0.0026	MOM_24	≤	0.2214	0.75	0.70%	10	-79.41%	65.52%	-1.13	-1.38
-0.5	20	2.65	0.0040	WRSTRENGTH_ALSI	≤	0.4038	0.73	0.69%	9	-79.55%	66.31%	-1.09	-1.36
-0.5	21	2.49	0.0065	SDEV_VOL(-9m)	≤	1.0505	0.73	0.69%	8	-79.67%	67.01%	-1.06	-1.35
-0.5	22	2.31	0.0105	POS_NET(-12m)	≥	5.0000	0.72	0.67%	7	-78.51%	67.45%	-1.00	-1.33
-0.5	23	2.10	0.0180	AGE	≤	3.5611	0.48	0.45%	6	-84.54%	63.06%	-1.31	-1.51
-0.5	24	1.89	0.0296	VOL_12(-9m)	≤	1.3094	0.47	0.44%	5	-82.62%	61.36%	-1.31	-1.52
-0.5	25	1.64	0.0502	CH_INV	≥	0.1292	0.27	0.25%	4	-81.52%	47.81%	-2.07	-1.94
-0.5	26	1.34	0.0907	VOL_6(-9m)	≤	1.0042	0.27	0.25%	3	-80.36%	47.81%	-1.99	-1.91
-0.5	27	0.89	0.1856	MOM_6(-12m)	≥	-0.1273	0.23	0.22%	2	-84.14%	47.85%	-2.15	-1.99

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-50.71%	-1487%	352	-6.68%	-222%	470	-20.10%	-600%	358	-26.06%	-945%	435	-11.55%	-155%	161
3	-82.28%	-843%	123	-18.14%	-348%	230	-31.07%	-704%	272	-42.04%	-1125%	321	-1.23%	-9%	86
4	-82.28%	-843%	123	-24.91%	-374%	180	-48.75%	-658%	162	-73.43%	-881%	144	41.64%	94%	27
5	-111.06%	-518%	56	-26.28%	-177%	81	-77.11%	-565%	88	-83.23%	-583%	84	-22.19%	-28%	15
6	-111.06%	-518%	56	-26.28%	-177%	81	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
7	-110.64%	-470%	51	-24.54%	-127%	62	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
8	-110.64%	-470%	51	-24.54%	-127%	62	-82.04%	-574%	84	-81.32%	-515%	76	68.77%	17%	3
9	-114.37%	-400%	42	-25.12%	-124%	59	-82.04%	-574%	84	-81.32%	-515%	76	68.77%	17%	3
10	-114.37%	-400%	42	-26.14%	-115%	53	-79.43%	-516%	78	-81.32%	-515%	76	68.77%	17%	3
11	-114.37%	-400%	42	-26.14%	-115%	53	-77.82%	-428%	66	-81.32%	-515%	76	68.77%	17%	3
12	-114.99%	-316%	33	-25.43%	-106%	50	-77.82%	-428%	66	-81.32%	-515%	76	68.77%	17%	3
13	-114.99%	-316%	33	-27.98%	-98%	42	-73.18%	-378%	62	-81.32%	-515%	76	68.77%	17%	3
14	-133.10%	-244%	22	-32.35%	-111%	41	-73.18%	-378%	62	-81.32%	-515%	76	68.77%	17%	3
15	-174.09%	-174%	12	-34.46%	-112%	39	-81.06%	-398%	59	-81.28%	-454%	67	68.77%	17%	3
16	-174.09%	-174%	12	-34.46%	-112%	39	-83.82%	-398%	57	-83.02%	-394%	57	68.77%	17%	3
17	-174.09%	-174%	12	-34.46%	-112%	39	-83.46%	-389%	56	-85.03%	-326%	46	68.77%	17%	3
18	-174.09%	-174%	12	-34.46%	-112%	39	-92.31%	-385%	50	-81.72%	-272%	40	68.77%	17%	3
19	-174.09%	-174%	12	-34.46%	-112%	39	-103.60%	-389%	45	-78.67%	-216%	33	68.77%	17%	3
20	-174.09%	-174%	12	-34.46%	-112%	39	-103.60%	-389%	45	-78.91%	-138%	21	68.77%	17%	3
21	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-322%	37	-78.91%	-138%	21	68.77%	17%	3
22	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	-78.91%	-138%	21	68.77%	17%	3
23	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
24	-167.01%	-56%	4	-22.63%	-36%	19	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
25	0.00%	0%	0	-4.88%	-4%	11	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
26	0.00%	0%	0	-4.20%	-3%	9	-105.75%	-238%	27	0.00%	0%	0	0.00%	0%	0
27	0.00%	0%	0	6.61%	2%	4	-102.29%	-170%	20	0.00%	0%	0	0.00%	0%	0

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.1	1	6.90	0.0000	MTB	≥	3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
-0.02	2	6.98	0.0000	CH_DEP	≥	0.5059	5.93	5.55%	33	-25.99%	27.76%	-0.86	-1.33
-0.14	3	6.06	0.0000	INVITA(-12m)	≤	0.1040	4.37	4.08%	32	-36.58%	32.66%	-1.21	-1.46
-0.26	4	5.13	0.0000	DY	≤	0.0053	2.53	2.37%	29	-54.38%	54.61%	-0.94	-1.19
-0.38	5	4.48	0.0000	CH_TA(-9m)	≥	-0.0148	1.88	1.76%	25	-64.63%	56.25%	-1.22	-1.35
-0.5	6	4.09	0.0000	RSTRENGTH_ALSI	≤	0.8284	1.58	1.48%	23	-70.44%	59.79%	-1.27	-1.36
-0.5	7	4.12	0.0000	CH_TA	≥	-0.1104	1.38	1.29%	23	-71.46%	60.89%	-1.24	-1.36
-0.5	8	4.01	0.0001	MAXP_24	≤	0.9431	1.37	1.28%	22	-70.97%	60.42%	-1.22	-1.36
-0.5	9	3.93	0.0001	MOM_12	≤	0.4299	1.37	1.28%	20	-72.64%	60.23%	-1.27	-1.39
-0.5	10	3.83	0.0001	MAXP_12	≤	0.9943	1.68	1.57%	19	-73.35%	60.28%	-1.28	-1.40
-0.5	11	3.72	0.0001	EPS	≤	1.1900	1.27	1.18%	18	-74.04%	56.42%	-1.47	-1.51
-0.5	12	3.61	0.0002	POS_NET(-9m)	≥	5.0000	1.15	1.07%	17	-72.96%	55.74%	-1.44	-1.51
-0.5	13	3.55	0.0002	WRSTRENGTH_ALSI	≤	0.7347	1.12	1.04%	16	-74.16%	55.86%	-1.46	-1.52
-0.5	14	3.44	0.0003	ACCITA(-12m)	≤	-0.0003	1.08	1.01%	15	-74.96%	58.98%	-1.32	-1.46
-0.5	15	3.32	0.0005	MOM_24	≤	0.5919	0.88	0.83%	14	-76.30%	63.42%	-1.17	-1.38
-0.5	16	3.20	0.0007	POS_SALES	≤	7.0000	0.88	0.83%	13	-77.03%	63.47%	-1.17	-1.39
-0.5	17	3.07	0.0011	EARNG_12(-6m)	≥	-0.0049	0.87	0.81%	12	-76.16%	63.40%	-1.13	-1.37
-0.5	18	2.94	0.0017	WRSTRENGTH_ALSI(-9m)	≥	0.1548	0.80	0.75%	11	-77.62%	64.86%	-1.11	-1.36
-0.5	19	2.80	0.0026	EARNG_12(-12m)	≥	-0.0202	0.75	0.70%	10	-79.41%	65.52%	-1.13	-1.38
-0.5	20	2.65	0.0040	MOM_18	≤	0.1758	0.73	0.69%	9	-79.99%	65.52%	-1.13	-1.39
-0.5	21	2.49	0.0065	SDEV_VOL(-9m)	≤	1.0505	0.73	0.69%	8	-80.17%	66.22%	-1.10	-1.38
-0.5	22	2.31	0.0105	POS_NET(-12m)	≥	5.0000	0.72	0.67%	7	-79.07%	66.62%	-1.04	-1.35
-0.5	23	2.10	0.0180	AGE	≤	3.5611	0.48	0.45%	6	-84.54%	63.06%	-1.31	-1.51
-0.5	24	1.89	0.0296	VOL_12(-9m)	≤	1.3094	0.47	0.44%	5	-82.62%	61.36%	-1.31	-1.52
-0.5	25	1.64	0.0502	CH_INV	≥	0.1292	0.27	0.25%	4	-81.52%	47.81%	-2.07	-1.84
-0.5	26	1.34	0.0907	VOL_6(-9m)	≤	1.0042	0.27	0.25%	3	-80.36%	47.81%	-1.99	-1.91
-0.5	27	0.89	0.1856	MOM_6(-12m)	≥	-0.1273	0.23	0.22%	2	-84.14%	47.85%	-2.15	-1.99

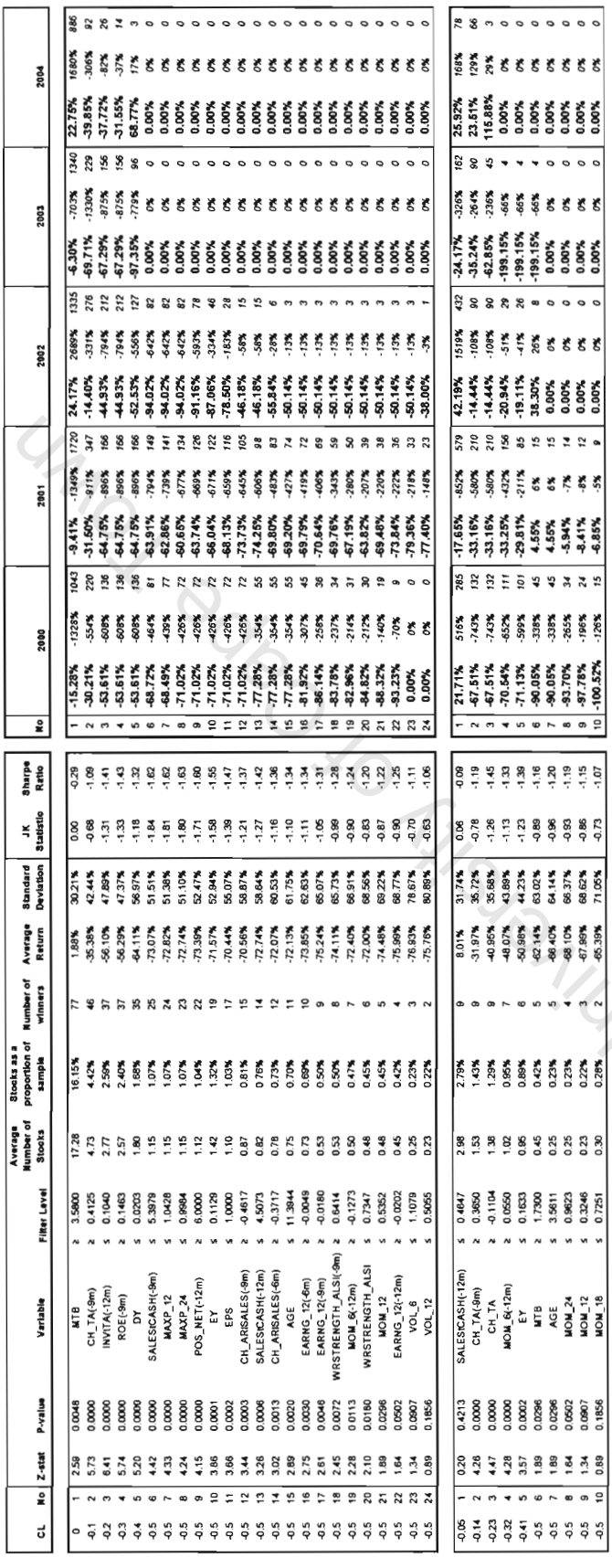
No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-50.59%	-1459%	346	-6.81%	-260%	458	-23.73%	-583%	295	-34.99%	-1003%	344	-2.80%	-22%	93
3	-64.45%	-1004%	187	-27.26%	-595%	262	-31.07%	-704%	272	-43.14%	-1132%	315	-0.32%	-2%	92
4	-60.56%	-792%	157	-37.12%	-634%	205	-77.40%	-626%	97	-80.06%	-761%	114	41.64%	94%	27
5	-59.32%	-544%	110	-50.10%	-413%	99	-77.11%	-565%	88	-83.23%	-583%	84	-22.19%	-28%	15
6	-97.27%	-494%	61	-30.21%	-161%	64	-77.11%	-565%	88	-83.23%	-583%	84	-22.19%	-28%	15
7	-97.27%	-494%	61	-30.21%	-161%	64	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
8	-98.69%	-419%	51	-29.60%	-153%	62	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
9	-98.69%	-419%	51	-29.60%	-153%	62	-84.42%	-577%	82	-87.44%	-393%	54	68.77%	17%	3
10	-98.69%	-419%	51	-29.60%	-153%	62	-90.32%	-572%	76	-84.98%	-340%	48	68.77%	17%	3
11	-106.18%	-354%	40	-31.12%	-158%	61	-90.32%	-572%	76	-84.98%	-340%	48	68.77%	17%	3
12	-104.46%	-270%	31	-30.76%	-149%	58	-90.32%	-572%	76	-84.98%	-340%	48	68.77%	17%	3
13	-104.46%	-270%	31	-30.76%	-149%	58	-97.33%	-576%	71	-83.00%	-284%	41	68.77%	17%	3
14	-120.59%	-221%	22	-29.69%	-136%	55	-97.33%	-576%	71	-83.00%	-284%	41	68.77%	17%	3
15	-174.09%	-174%	12	-29.00%	-128%	53	-97.33%	-576%	71	-83.00%	-284%	41	68.77%	17%	3
16	-174.09%	-174%	12	-30.65%	-120%	47	-95.61%	-518%	65	-83.00%	-284%	41	68.77%	17%	3
17	-174.09%	-174%	12	-30.65%	-120%	47	-97.27%	-430%	53	-83.00%	-284%	41	68.77%	17%	3
18	-174.09%	-174%	12	-30.65%	-120%	47	-107.38%	-438%	49	-78.57%	-216%	33	68.77%	17%	3
19	-174.09%	-174%	12	-34.46%	-112%	39	-103.60%	-389%	45	-78.57%	-216%	33	68.77%	17%	3
20	-174.09%	-174%	12	-34.46%	-112%	39	-103.60%	-389%	45	-76.34%	-140%	22	87.72%	15%	2
21	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-322%	37	-76.34%	-140%	22	87.72%	15%	2
22	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	-76.34%	-140%	22	87.72%	15%	2
23	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
24	-167.01%	-56%	4	-22.63%	-36%	19	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
25	0.00%	0%	0	-4.88%	-4%	11	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
26	0.00%	0%	0	-4.20%	-3%	9	-105.75%	-238%	27	0.00%	0%	0	0.00%	0%	0
27	0.00%	0%	0	6.61%	2%	4	-102.29%	-170%	20	0.00%	0%	0	0.00%	0%	0

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.05	1	4.88	0.0000	MTB	≥	3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
-0.06	2	6.27	0.0000	CH_DEP	≥	0.5910	5.20	4.86%	33	-27.47%	28.48%	-0.91	-1.35
-0.17	3	5.04	0.0000	CH_TA(-9m)	≥	0.3650	2.63	2.46%	25	-54.54%	49.08%	-1.18	-1.33
-0.28	4	4.92	0.0000	DY	≤	0.0203	2.00	1.87%	25	-61.40%	54.83%	-1.18	-1.32
-0.39	5	4.46	0.0000	RSTRENGTH_ALSI	≤	0.8284	1.70	1.59%	23	-66.15%	54.10%	-1.39	-1.43
-0.5	6	4.09	0.0000	POS_NET(-9m)	≥	5.0000	1.52	1.42%	23	-67.49%	54.74%	-1.39	-1.44
-0.5	7	4.12	0.0000	CH_TA	≥	-0.1104	1.32	1.23%	23	-68.39%	54.89%	-1.40	-1.45
-0.5	8	4.01	0.0001	MAXP_24	≤	0.9431	1.32	1.23%	22	-67.77%	54.32%	-1.38	-1.46
-0.5	9	3.91	0.0001	CH_ARISALES	≥	-0.2913	1.30	1.21%	21	-67.54%	54.27%	-1.35	-1.45
-0.5	10	3.80	0.0001	POS_OP	≤	11.0000	1.60	1.50%	20	-66.71%	52.91%	-1.37	-1.48
-0.5	11	3.68	0.0001	EPS	≤	1.1900	1.18	1.11%	19	-67.01%	51.65%	-1.43	-1.52
-0.5	12	3.57	0.0002	ACCITA(-12m)	≤	-0.0003	1.12	1.04%	18	-67.30%	53.51%	-1.33	-1.47
-0.5	13	3.48	0.0003	EARNG_12(-9m)	≥	-0.0180	0.92	0.86%	17	-67.94%	58.33%	-1.12	-1.36
-0.5	14	3.40	0.0004	WRSTRENGTH_ALSI(-9m)	≥	0.1548	0.92	0.86%	16	-68.46%	58.22%	-1.13	-1.37
-0.5	15	3.31	0.0005	INVITA(-12m)	≤	0.0078	0.87	0.81%	15	-69.08%	59.05%	-1.10	-1.36
-0.5	16	3.21	0.0007	POS_NET(-12m)	≥	5.0000	0.82	0.76%	13	-70.90%	59.28%	-1.14	-1.39
-0.5	17	3.08	0.0011	MOM_24	≤	0.7771	0.82	0.76%	12	-71.70%	59.96%	-1.12	-1.38
-0.5	18	2.94	0.0017	MOM_18	≤	0.3589	0.60	0.56%	11	-74.55%	57.70%	-1.29	-1.49
-0.5	19	2.80	0.0026	MAXP_12	≤	0.9943	0.60	0.56%	10	-74.32%	57.74%	-1.27	-1.48
-0.5	20	2.65	0.0040	MOM_12	≤	0.2193	0.55	0.51%	9	-75.77%	58.57%	-1.27	-1.48
-0.5	21	2.49	0.0064	POS_SALES	≤	7.0000	0.53	0.50%	8	-76.85%	59.42%	-1.25	-1.48
-0.5	22	2.31	0.0104	WRSTRENGTH_ALSI	≤	0.4038	0.52	0.48%	7	-76.71%	60.44%	-1.19	-1.45
-0.5	23	2.28	0.0112	VOL_12(-9m)	≤	1.3094	0.50	0.47%	7	-80.91%	57.24%	-1.46	-1.61
-0.5	24	2.10	0.0178	AGE	≤	3.5611	0.30	0.28%	6	-82.14%	47.34%	-2.17	-1.97
-0.5	25	1.89	0.0296	EARNG_12(-6m)	≥	-0.0049	0.28	0.26%	5	-80.91%	47.81%	-2.04	-1.92
-0.5	26	1.64	0.0502	VOL_6(-9m)	≤	1.0042	0.27	0.25%	4	-79.88%	47.81%	-1.97	-1.90
-0.5	27	1.34	0.0907	SDEV_VOL(-9m)	≤	1.0505	0.27	0.25%	3	-80.36%	47.81%	-1.97	-1.91
-0.5	28	0.89	0.1856	MOM_6(-12m)	≥	-0.1273	0.23	0.22%	2	-84.14%	47.85%	-2.13	-1.99

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-52.28%	-1429%	328	-7.89%	-263%	400	-25.19%	-588%	280	-35.20%	-994%	339	0.84%	6%	81
3	-45.92%	-624%	163	-37.70%	-295%	94	-74.19%	-581%	94	-71.62%	-579%	97	-28.80%	-48%	20
4	-52.39%	-607%	139	-44.61%	-305%	82	-77.11%	-565%	88	-83.23%	-583%	84	-22.19%	-28%	15
5	-74.33%	-558%	90	-13.45%	-53%	47	-77.11%	-565%	88	-83.23%	-583%	84	-22.19%	-28%	15
6	-78.58%	-517%	79	-16.07%	-62%	46	-77.11%	-565%	88	-83.23%	-583%	84	-22.19%	-28%	15
7	-78.68%	-517%	79	-16.07%	-62%	46	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
8	-76.92%	-442%	69	-14.56%	-53%	44	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
9	-74.47%	-372%	60	-14.67%	-50%	41	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
10	-71.39%	-303%	51	-10.52%	-33%	38	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
11	-71.37%	-238%	40	-12.51%	-39%	37	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
12	-73.20%	-189%	31	-9.18%	-26%	34	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
13	-81.21%	-142%	21	-6.75%	-18%	32	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
14	-81.21%	-142%	21	-6.75%	-18%	32	-82.04%	-574%	84	-81.32%	-515%	76	68.77%	17%	3
15	-81.21%	-142%	21	-4.98%	-10%	24	-78.65%	-524%	80	-81.32%	-515%	76	68.77%	17%	3
16	-81.21%	-142%	21	-4.98%	-10%	24	-91.02%	-523%	69	-77.17%	-405%	63	68.77%	17%	3
17	-83.90%	-70%	10	-11.78%	-23%	23	-91.02%	-523%	69	-77.17%	-405%	63	68.77%	17%	3
18	0.00%	0%	0	-13.75%	-24%	21	-98.87%	-544%	66	-76.43%	-344%	54	68.77%	17%	3
19	0.00%	0%	0	-13.75%	-24%	21	-98.79%	-535%	65	-76.89%	-276%	43	68.77%	17%	3
20	0.00%	0%	0	-13.75%	-24%	21	-101.86%	-535%	63	-78.57%	-216%	33	68.77%	17%	3
21	0.00%	0%	0	-12.81%	-16%	15	-100.38%	-477%	57	-78.57%	-216%	33	68.77%	17%	3
22	0.00%	0%	0	-12.81%	-16%	15	-100.38%	-477%	57	-78.91%	-138%	21	68.77%	17%	3
23	0.00%	0%	0	-12.81%	-16%	15	-100.38%	-477%	57	-83.02%	-76%	11	30.88%	3%	1
24	0.00%	0%	0	-12.81%	-16%	15	-100.38%	-477%	57	0.00%	0%	0	0.00%	0%	0
25	0.00%	0%	0	-12.81%	-16%	15	-103.60%	-389%	45	0.00%	0%	0	0.00%	0%	0
26	0.00%	0%	0	-13.56%	-15%	13	-104.52%	-305%	35	0.00%	0%	0	0.00%	0%	0
27	0.00%	0%	0	-4.20%	-3%	9	-105.75%	-238%	27	0.00%	0%	0	0.00%	0%	0
28	0.00%	0%	0	6.61%	2%	4	-102.29%	-170%	20	0.00%	0%	0	0.00%	0%	0

Appendix E.3.A Results for dynamic comparison level tests: restricted sample

Continued: Length = five filters; Initial comparison level = 0 and −5 percent



CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0	1	2.59	0.0048	MTB	≥ 3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
-0.1	2	5.73	0.0000	CH_TA(-9m)	≥ 0.4125	4.73	4.42%	46	-35.38%	42.44%	-0.68	-1.09
-0.2	3	6.41	0.0000	INVITA(-12m)	≤ 0.1040	2.77	2.59%	37	-56.10%	47.89%	-1.31	-1.41
-0.3	4	5.74	0.0000	ROE(-9m)	≥ 0.1463	2.57	2.40%	37	-56.29%	47.37%	-1.33	-1.43
-0.4	5	5.20	0.0000	DY	≤ 0.0203	1.80	1.68%	35	-64.11%	56.97%	-1.18	-1.32
-0.5	6	4.42	0.0000	SALESCASH(-9m)	≤ 5.3979	1.15	1.07%	25	-73.07%	51.51%	-1.84	-1.62
-0.5	7	4.33	0.0000	MAXP_12	≤ 1.0428	1.15	1.07%	24	-72.82%	51.38%	-1.81	-1.62
-0.5	8	4.24	0.0000	MAXP_24	≤ 0.9984	1.15	1.07%	23	-72.74%	51.10%	-1.80	-1.63
-0.5	9	4.15	0.0000	POS_NET(-12m)	≥ 6.0000	1.12	1.04%	22	-73.39%	52.47%	-1.71	-1.60
-0.5	10	3.86	0.0001	EY	≤ 0.1129	1.42	1.32%	19	-71.57%	52.94%	-1.58	-1.55
-0.5	11	3.66	0.0002	EPS	≤ 1.0000	1.10	1.03%	17	-70.44%	55.07%	-1.39	-1.47
-0.5	12	3.44	0.0003	CH_ARISALES(-9m)	≥ -0.4617	0.87	0.81%	15	-70.56%	58.87%	-1.21	-1.37
-0.5	13	3.26	0.0006	SALESCASH(-12m)	≤ 4.5073	0.82	0.76%	14	-72.74%	58.64%	-1.27	-1.42
-0.5	14	3.02	0.0013	CH_ARISALES(-6m)	≥ -0.3717	0.78	0.73%	12	-72.07%	60.53%	-1.16	-1.36
-0.5	15	2.89	0.0020	AGE	≤ 11.3844	0.75	0.70%	11	-72.13%	61.75%	-1.10	-1.34
-0.5	16	2.75	0.0030	EARNG_12(-6m)	≥ -0.0049	0.73	0.69%	10	-73.85%	62.83%	-1.11	-1.34
-0.5	17	2.61	0.0046	EARNG_12(-9m)	≥ -0.0180	0.53	0.50%	9	-75.24%	65.07%	-1.05	-1.31
-0.5	18	2.45	0.0072	WRSTRENGTH_ALSI(-9m)	≥ 0.6414	0.53	0.50%	8	-74.11%	65.73%	-0.99	-1.28
-0.5	19	2.28	0.0113	MOM_6(-12m)	≥ -0.1273	0.50	0.47%	7	-72.40%	66.91%	-0.90	-1.24
-0.5	20	2.10	0.0180	WRSTRENGTH_ALSI	≤ 0.7347	0.48	0.45%	6	-72.00%	68.56%	-0.83	-1.20
-0.5	21	1.89	0.0296	MOM_12	≤ 0.5352	0.48	0.45%	5	-74.48%	69.22%	-0.87	-1.22
-0.5	22	1.64	0.0502	EARNG_12(-12m)	≥ -0.0202	0.45	0.42%	4	-75.99%	68.77%	-0.90	-1.25
-0.5	23	1.34	0.0907	VOL_6	≤ 1.1079	0.25	0.23%	3	-76.93%	78.67%	-0.70	-1.11
-0.5	24	0.89	0.1856	VOL_12	≤ 0.5055	0.23	0.22%	2	-75.76%	80.89%	-0.63	-1.06
-0.05	1	0.20	0.4213	SALESCASH(-12m)	≤ 0.4647	2.98	2.79%	9	8.01%	31.74%	0.06	-0.09
-0.14	2	4.26	0.0000	CH_TA(-9m)	≥ 0.3650	1.53	1.43%	9	-31.97%	35.72%	-0.78	-1.19
-0.23	3	4.47	0.0000	CH_TA	≥ -0.1104	1.38	1.29%	9	-40.95%	35.68%	-1.26	-1.45
-0.32	4	4.28	0.0000	MOM_6(-12m)	≥ 0.0550	1.02	0.95%	7	-48.07%	43.89%	-1.13	-1.33
-0.41	5	3.57	0.0002	EY	≤ 0.1633	0.95	0.89%	6	-50.98%	44.23%	-1.23	-1.38
-0.5	6	1.89	0.0296	MTB	≥ 1.7300	0.45	0.42%	5	-62.14%	63.02%	-0.89	-1.16
-0.5	7	1.89	0.0296	AGE	≤ 3.5611	0.25	0.23%	5	-66.40%	64.14%	-0.96	-1.20
-0.5	8	1.64	0.0502	MOM_24	≤ 0.9623	0.25	0.23%	4	-68.10%	66.37%	-0.93	-1.19
-0.5	9	1.34	0.0907	MOM_12	≤ 0.3246	0.23	0.22%	3	-67.89%	68.62%	-0.86	-1.15
-0.5	10	0.89	0.1856	MOM_18	≤ 0.7251	0.30	0.28%	2	-65.39%	71.05%	-0.73	-1.07

No	2000		2001		2002		2003		2004	
1	-15.28%	-1328%	-9.41%	-7349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-30.21%	-554%	-31.50%	-911%	347	-14.40%	-331%	276	-69.71%	-1330%	229	-39.85%	-306%	92
3	-53.61%	-608%	-64.75%	-896%	166	-44.93%	-794%	212	-67.29%	-875%	156	-37.72%	-82%	26
4	-53.61%	-608%	-64.75%	-896%	166	-44.93%	-794%	212	-67.29%	-875%	156	-31.55%	-37%	14
5	-53.61%	-608%	-64.75%	-896%	166	-52.53%	-556%	127	-97.35%	-779%	96	58.77%	17%	3
6	-68.72%	-464%	-83.91%	-794%	149	-94.02%	-642%	82	0.00%	0%	0	0.00%	0%	0
7	-68.49%	-439%	-82.86%	-739%	141	-94.02%	-642%	82	0.00%	0%	0	0.00%	0%	0
8	-71.02%	-426%	-80.65%	-677%	134	-94.02%	-642%	82	0.00%	0%	0	0.00%	0%	0
9	-71.02%	-426%	-63.74%	-669%	126	-91.16%	-593%	78	0.00%	0%	0	0.00%	0%	0
10	-71.02%	-426%	-66.04%	-671%	122	-87.06%	-334%	46	0.00%	0%	0	0.00%	0%	0
11	-71.02%	-426%	-68.13%	-659%	116	-78.50%	-183%	28	0.00%	0%	0	0.00%	0%	0
12	-71.02%	-426%	-73.73%	-645%	105	-46.18%	-58%	15	0.00%	0%	0	0.00%	0%	0
13	-77.28%	-354%	-74.25%	-606%	98	-46.18%	-58%	15	0.00%	0%	0	0.00%	0%	0
14	-77.28%	-354%	-69.80%	-483%	83	-55.84%	-29%	6	0.00%	0%	0	0.00%	0%	0
15	-77.28%	-354%	-69.20%	-427%	74	-50.14%	-13%	3	0.00%	0%	0	0.00%	0%	0
16	-81.92%	-307%	-69.79%	-419%	72	-50.14%	-13%	3	0.00%	0%	0	0.00%	0%	0
17	-86.14%	-258%	-70.64%	-406%	69	-50.14%	-13%	3	0.00%	0%	0	0.00%	0%	0
18	-83.78%	-237%	-69.76%	-343%	59	-50.14%	-13%	3	0.00%	0%	0	0.00%	0%	0
19	-82.96%	-214%	-67.19%	-280%	50	-50.14%	-13%	3	0.00%	0%	0	0.00%	0%	0
20	-84.82%	-212%	-63.82%	-207%	39	-50.14%	-13%	3	0.00%	0%	0	0.00%	0%	0
21	-88.32%	-140%	-69.46%	-220%	38	-50.14%	-13%	3	0.00%	0%	0	0.00%	0%	0
22	-93.23%	-70%	-73.84%	-222%	36	-50.14%	-13%	3	0.00%	0%	0	0.00%	0%	0
23	0.00%	0%	-79.36%	-218%	33	-50.14%	-13%	3	0.00%	0%	0	0.00%	0%	0
24	0.00%	0%	-77.40%	-148%	23	-38.00%	-3%	1	0.00%	0%	0	0.00%	0%	0
1	21.71%	516%	-17.65%	-852%	579	42.19%	1519%	432	-24.17%	-326%	162	25.92%	168%	78
2	-67.51%	-743%	-33.16%	-580%	210	-14.44%	-108%	90	-35.24%	-264%	90	23.61%	129%	66
3	-67.51%	-743%	-33.16%	-580%	210	-14.44%	-108%	90	-62.85%	-236%	45	115.88%	29%	3
4	-70.54%	-652%	-33.25%	-432%	156	-20.84%	-51%	29	-199.15%	-66%	4	0.00%	0%	0
5	-71.13%	-599%	-29.81%	-211%	85	-19.11%	-41%	26	-199.15%	-66%	4	0.00%	0%	0
6	-90.05%	-338%	4.55%	6%	15	38.30%	26%	8	-199.15%	-66%	4	0.00%	0%	0
7	-90.05%	-338%	4.55%	6%	15	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
8	-93.70%	-265%	-5.84%	-7%	14	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
9	-97.78%	-196%	-8.41%	-8%	12	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
10	-100.52%	-126%	-6.85%	-5%	9	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0

Appendix E.3.B Results for dynamic comparison level tests: restricted sample

Continued: Length = ten filters; Initial comparison level = 20 and 15 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.2	1	10.26	0.0000	MTB	≥ 2.4700	28.42	26.56%	106	8.98%	23.73%	0.15	-0.07
0.13	2	9.52	0.0000	MAXP_12	≤ 0.9943	24.25	22.66%	92	2.85%	23.92%	0.01	-0.33
0.06	3	7.94	0.0000	CH_TA	≥ 0.4036	6.68	6.25%	34	-23.92%	31.60%	-0.55	-1.10
-0.01	4	7.89	0.0000	DY	≤ 0.0452	5.97	5.58%	34	-29.89%	32.65%	-0.79	-1.25
-0.08	5	8.05	0.0000	SALESICASH	≤ 14.2636	4.85	4.53%	34	-37.80%	35.15%	-1.08	-1.38
-0.15	6	7.32	0.0000	SALESICASH(-12m)	≤ 8.5499	4.22	3.94%	34	-41.81%	37.54%	-1.14	-1.40
-0.22	7	6.12	0.0000	POS_ROE	≤ 17.0000	3.47	3.24%	33	-48.86%	38.52%	-1.45	-1.54
-0.29	8	5.47	0.0000	EPS	≤ 1.1900	2.53	2.37%	30	-53.22%	43.17%	-1.35	-1.47
-0.36	9	4.78	0.0000	ROE(-9m)	≥ 0.0497	2.15	2.01%	27	-58.75%	44.13%	-1.55	-1.56
-0.43	10	4.73	0.0000	SALESICASH(-9m)	≤ 5.3979	2.12	1.98%	26	-70.22%	52.99%	-1.52	-1.52
-0.5	11	4.43	0.0000	POS_SALES	≤ 12.0000	1.95	1.82%	25	-72.89%	52.99%	-1.61	-1.57
-0.5	12	4.42	0.0000	MAXP_24	≤ 0.9431	1.45	1.36%	25	-73.96%	55.26%	-1.50	-1.52
-0.5	13	4.36	0.0000	RSTRENGTH_ALSI	≤ 0.7497	1.38	1.29%	25	-75.00%	55.70%	-1.50	-1.53
-0.5	14	4.27	0.0000	EY	≤ 0.1297	1.35	1.26%	24	-74.39%	55.89%	-1.45	-1.51
-0.5	15	4.18	0.0000	MOM_12	≤ 0.5352	1.35	1.26%	23	-75.04%	57.37%	-1.38	-1.48
-0.5	16	4.09	0.0000	WCITA	≥ 0.1666	1.15	1.07%	22	-75.34%	59.79%	-1.26	-1.43
-0.5	17	4.00	0.0001	GM	≤ 0.2665	0.95	0.89%	21	-75.80%	61.98%	-1.18	-1.38
-0.5	18	3.90	0.0001	MOM_18	≤ 0.9082	0.93	0.87%	20	-76.05%	62.51%	-1.15	-1.38
-0.5	19	3.80	0.0001	EARNG_12(-6m)	≥ -0.0049	0.90	0.84%	19	-75.41%	63.01%	-1.10	-1.35
-0.5	20	3.60	0.0002	AGE	≤ 12.7000	0.87	0.81%	17	-76.82%	63.48%	-1.11	-1.37
-0.5	21	3.49	0.0003	EARNG_12(-9m)	≥ 0.0013	0.85	0.79%	16	-77.20%	63.84%	-1.09	-1.37
-0.5	22	3.38	0.0004	WRSTRENGTH_ALSI	≤ 0.6244	0.83	0.78%	15	-77.48%	61.53%	-1.17	-1.43
-0.5	23	3.26	0.0006	MOM_24	≤ 0.2214	0.63	0.59%	14	-77.85%	59.73%	-1.24	-1.48
-0.5	24	3.02	0.0013	WRSTRENGTH_ALSI(-9m)	≥ 0.2764	0.58	0.55%	12	-76.10%	61.33%	-1.11	-1.41
-0.5	25	2.89	0.0020	POS_NET(-12m)	≥ 5.0000	0.57	0.53%	11	-74.93%	61.79%	-1.05	-1.38
-0.5	26	2.75	0.0030	POS_NET(-9m)	≥ 6.0000	0.53	0.50%	10	-73.72%	62.95%	-0.97	-1.34
-0.5	27	2.61	0.0046	POS_OP	≤ 13.0000	0.52	0.48%	9	-71.45%	63.45%	-0.88	-1.29
-0.5	28	2.45	0.0072	CH_INV	≥ 0.1292	0.32	0.30%	8	-69.05%	47.20%	-1.48	-1.69
-0.5	29	2.10	0.0180	VOL_12(-9m)	≤ 1.3094	0.30	0.28%	6	-71.31%	48.72%	-1.59	-1.75
-0.5	30	1.89	0.0296	VOL_6(-9m)	≤ 1.0042	0.28	0.26%	5	-68.58%	46.75%	-1.45	-1.69
-0.5	31	1.64	0.0502	VOL_6	≤ 0.7680	0.27	0.25%	4	-65.72%	47.19%	-1.29	-1.61
-0.5	32	1.34	0.0907	VOL_12	≤ 0.4200	0.25	0.23%	3	-61.48%	48.34%	-1.07	-1.48
-0.5	33	0.89	0.1856	ROE	≥ 0.0642	0.22	0.20%	2	-55.82%	47.41%	-0.90	-1.39

No	2000			2001			2002			2003			2004		
1	-10.56%	-1706%	1939	-1.77%	-429%	2914	25.17%	5035%	2401	11.91%	2422%	2441	24.04%	3079%	1537
2	-14.52%	-2001%	1653	-4.25%	-848%	2393	20.66%	2672%	1552	8.24%	1308%	1903	11.40%	865%	911
3	-48.00%	-1124%	281	-11.08%	-468%	507	-15.50%	-603%	467	-30.21%	-934%	371	-38.87%	-292%	90
4	-48.00%	-1124%	281	-24.66%	-919%	449	-18.86%	-569%	362	-32.04%	-956%	358	-35.92%	-257%	86
5	-54.88%	-1079%	236	-29.65%	-991%	401	-42.36%	-847%	240	-31.85%	-756%	285	-35.92%	-257%	86
6	-54.88%	-1079%	236	-29.65%	-991%	401	-48.53%	-894%	221	-44.50%	-656%	177	-39.42%	-227%	69
7	-72.29%	-1090%	181	-29.45%	-653%	266	-61.43%	-829%	162	-46.01%	-621%	162	-39.42%	-227%	69
8	-69.80%	-913%	157	-28.72%	-608%	254	-73.39%	-856%	140	-82.34%	-384%	56	-40.39%	-219%	65
9	-74.88%	-793%	127	-32.19%	-384%	143	-70.68%	-806%	137	-82.34%	-384%	56	-40.39%	-219%	65
10	-102.23%	-494%	58	-28.92%	-229%	95	-108.89%	-780%	86	-82.34%	-384%	56	-40.39%	-219%	65
11	-102.23%	-494%	58	-28.92%	-229%	95	-108.89%	-780%	86	-110.84%	-296%	32	-38.26%	-169%	53
12	-112.10%	-486%	52	-26.92%	-192%	89	-108.89%	-780%	86	-110.84%	-296%	32	-38.26%	-169%	53
13	-112.10%	-486%	52	-26.92%	-192%	89	-108.89%	-780%	86	-133.94%	-246%	22	-40.22%	-171%	51
14	-112.10%	-486%	52	-26.92%	-192%	89	-111.02%	-694%	75	-138.64%	-243%	21	-40.22%	-171%	51
15	-121.04%	-414%	41	-27.93%	-205%	88	-111.02%	-694%	75	-138.64%	-243%	21	-40.22%	-171%	51
16	-133.02%	-344%	31	-28.79%	-206%	86	-111.02%	-694%	75	-138.64%	-243%	21	-40.22%	-171%	51
17	-168.04%	-280%	20	-28.83%	-204%	85	-111.02%	-694%	75	-138.64%	-243%	21	-40.22%	-171%	51
18	-168.04%	-280%	20	-28.83%	-204%	85	-111.02%	-694%	75	-165.58%	-207%	15	-36.24%	-136%	45
19	-168.04%	-280%	20	-28.83%	-204%	85	-116.35%	-606%	63	-165.58%	-207%	15	-36.24%	-136%	45
20	-168.04%	-280%	20	-28.83%	-204%	85	-116.35%	-606%	63	-132.54%	-133%	12	-41.74%	-83%	24
21	-168.04%	-280%	20	-28.83%	-204%	85	-116.35%	-606%	63	-113.85%	-85%	9	-47.92%	-60%	15
22	-168.04%	-280%	20	-28.83%	-204%	85	-116.35%	-606%	63	-84.01%	-35%	5	-63.43%	-37%	7
23	-168.04%	-280%	20	-28.83%	-204%	85	-116.35%	-606%	63	0.00%	0%	0	0.00%	0%	0
24	-180.87%	-211%	14	-28.44%	-185%	78	-119.38%	-517%	52	0.00%	0%	0	0.00%	0%	0
25	-192.46%	-144%	9	-27.47%	-163%	71	-119.38%	-517%	52	0.00%	0%	0	0.00%	0%	0
26	-212.83%	-89%	5	-24.99%	-131%	63	-119.38%	-517%	52	0.00%	0%	0	0.00%	0%	0
27	-221.62%	-37%	2	-19.74%	-89%	54	-119.38%	-517%	52	0.00%	0%	0	0.00%	0%	0
28	0.00%	0%	0	-9.58%	-35%	44	-119.38%	-517%	52	0.00%	0%	0	0.00%	0%	0
29	0.00%	0%	0	-10.50%	-25%	29	-112.33%	-403%	43	0.00%	0%	0	0.00%	0%	0
30	0.00%	0%	0	-10.69%	-24%	27	-116.94%	-319%	33	0.00%	0%	0	0.00%	0%	0
31	0.00%	0%	0	-13.13%	-26%	24	-118.32%	-237%	24	0.00%	0%	0	0.00%	0%	0
32	0.00%	0%	0	-8.83%	-15%	20	-127.30%	-170%	16	0.00%	0%	0	0.00%	0%	0
33	0.00%	0%	0	-7.49%	-9%	15	-136.37%	-102%	9	0.00%	0%	0	0.00%	0%	0

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.15	1	8.65	0.0000	MTB	≥ 3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
0.085	2	8.64	0.0000	AGE	≤ 4.8667	5.73	5.36%	35	-21.72%	26.35%	-0.67	-1.22
0.02	3	8.30	0.0000	DY	≤ 0.0452	5.07	4.74%	35	-27.14%	27.11%	-0.97	-1.39
-0.045	4	7.25	0.0000	EY	≤ 0.1465	4.97	4.64%	33	-28.40%	27.99%	-0.98	-1.39
-0.11	5	5.88	0.0000	POS_OP	≤ 15.0000	3.40	3.18%	33	-39.71%	33.60%	-1.30	-1.49
-0.175	6	5.83	0.0000	INVITA	≤ 0.0375	2.60	2.43%	29	-52.68%	43.32%	-1.35	-1.46
-0.24	7	5.34	0.0000	MAXP_24	≤ 0.9984	2.57	2.40%	28	-53.85%	43.59%	-1.38	-1.48
-0.305	8	4.61	0.0000	RSTRENGTH_ALSI	≤ 0.6710	1.82	1.70%	23	-55.89%	37.83%	-1.94	-1.78
-0.37	9	3.90	0.0001	CH_TA	≥ -0.1104	1.47	1.37%	21	-83.94%	41.45%	-2.08	-1.80
-0.435	10	3.70	0.0001	CH_TA(-9m)	≥ -0.0623	1.40	1.31%	18	-75.76%	44.80%	-2.47	-1.93
-0.5	11	3.60	0.0002	MOM_12	≤ 0.5352	1.27	1.18%	17	-76.71%	46.37%	-2.33	-1.88
-0.5	12	3.49	0.0003	MAXP_12	≤ 0.8486	1.18	1.11%	16	-75.66%	45.72%	-2.30	-1.89
-0.5	13	3.38	0.0004	CH_ARISALES	≥ -0.2913	1.13	1.06%	15	-75.82%	47.86%	-2.08	-1.81
-0.5	14	3.26	0.0006	CH_DEP	≥ 0.3359	1.12	1.04%	14	-76.55%	46.61%	-2.20	-1.87
-0.5	15	3.14	0.0009	CH_INV	≥ -0.4171	0.88	0.83%	13	-77.17%	49.78%	-1.94	-1.77
-0.5	16	3.02	0.0013	CH_ASSTURN	≤ 0.0684	0.83	0.78%	12	-78.77%	50.65%	-1.92	-1.77
-0.5	17	2.89	0.0019	WRSTRENGTH_ALSI	≤ 0.2935	0.82	0.76%	11	-77.85%	49.05%	-1.98	-1.81
-0.5	18	2.75	0.0030	SDEV_VOL(-9m)	≤ 1.1883	0.78	0.73%	10	-77.79%	49.49%	-1.92	-1.79
-0.5	19	2.61	0.0046	POS_NET(-9m)	≥ 6.0000	0.75	0.70%	9	-76.76%	47.77%	-1.98	-1.83
-0.5	20	2.45	0.0071	ROE(-9m)	≥ 0.3073	0.53	0.50%	8	-74.59%	45.91%	-2.00	-1.86
-0.5	21	2.28	0.0112	VOL_12(-9m)	≤ 1.3094	0.52	0.48%	7	-75.81%	46.54%	-1.98	-1.87
-0.5	22	2.10	0.0178	VOL_6(-9m)	≤ 1.0042	0.52	0.48%	6	-74.29%	46.54%	-1.88	-1.83
-0.5	23	1.89	0.0290	CH_DEP(-12m)	≥ -0.3409	0.48	0.45%	5	-78.14%	46.84%	-2.05	-1.91
-0.5	24	1.64	0.0488	MOM_24	≤ 0.2214	0.28	0.26%	4	-82.34%	47.34%	-2.18	-1.98
-0.5	25	1.34	0.0907	EARNG_12(-6m)	≥ -0.0049	0.27	0.25%	3	-80.36%	47.81%	-2.01	-1.91
-0.5	26	0.89	0.1856	WRSTRENGTH_ALSI(-9m)	≥ 0.2764	0.23	0.22%	2	-76.40%	48.87%	-1.72	-1.78

No	2000			2001			2002			2003			2004		
1	-16.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-37.26%	-2009%	647	-11.66%	-808%	832	-31.89%	-773%	291	38.87%	146%	45	5.95%	34%	69
3	-40.71%	-1971%	581	-18.68%	-1094%	703	-39.46%	-845%	257	55.74%	158%	34	5.95%	34%	69
4	-40.24%	-1841%	549	-18.45%	-1075%	699	-39.46%	-845%	257	37.76%	44%	14	22.25%	54%	29
5	-52.70%	-1814%	413	-21.05%	-712%	406	-68.56%	-737%	129	152.51%	13%	1	17.72%	34%	23
6	-64.10%	-1651%	309	-30.75%	-659%	257	-108.87%	-635%	70	152.51%	13%	1	17.72%	34%	23
7	-64.96%	-1505%	278	-30.44%	-639%	252	-108.87%	-635%	70	152.51%	13%	1	21.60%	20%	11
8	-64.12%	-1122%	210	-26.98%	-423%	188	-108.87%	-635%	70	0.00%	0%	0	0.00%	0%	0
9	-85.58%	-777%	109	-26.98%	-314%	145	-108.87%	-635%	70	0.00%	0%	0	0.00%	0%	0
10	-93.27%	-630%	81	-26.37%	-149%	68	-104.73%	-585%	67	0.00%	0%	0	0.00%	0%	0
11	-95.54%	-557%	70	-29.02%	-162%	67	-104.73%	-585%	67	0.00%	0%	0	0.00%	0%	0
12	-93.10%	-473%	61	-28.60%	-153%	64	-104.73%	-585%	67	0.00%	0%	0	0.00%	0%	0
13	-93.08%	-403%	52	-29.36%	-149%	61	-104.73%	-585%	67	0.00%	0%	0	0.00%	0%	0
14	-99.46%	-340%	41	-29.44%	-147%	60	-104.73%	-585%	67	0.00%	0%	0	0.00%	0%	0
15	-104.46%	-270%	31	-30.76%	-149%	58	-104.73%	-585%	67	0.00%	0%	0	0.00%	0%	0
16	-104.46%	-270%	31	-33.75%	-141%	50	-101.86%	-535%	63	0.00%	0%	0	0.00%	0%	0
17	-93.78%	-203%	26	-33.03%	-118%	43	-101.86%	-535%	63	0.00%	0%	0	0.00%	0%	0
18	-93.78%	-203%	26	-32.86%	-107%	39	-102.08%	-468%	55	0.00%	0%	0	0.00%	0%	0
19	-80.47%	-148%	22	-29.20%	-75%	31	-102.08%	-468%	55	0.00%	0%	0	0.00%	0%	0
20	-60.48%	-96%	19	-18.05%	-33%	22	-102.08%	-468%	55	0.00%	0%	0	0.00%	0%	0
21	-60.48%	-96%	19	-18.78%	-25%	16	-100.38%	-410%	49	0.00%	0%	0	0.00%	0%	0
22	-60.48%	-96%	19	-20.33%	-24%	14	-100.38%	-326%	39	0.00%	0%	0	0.00%	0%	0
23	-65.04%	-49%	9	-15.71%	-16%	12	-100.38%	-326%	39	0.00%	0%	0	0.00%	0%	0
24	0.00%	0%	0	-4.20%	-3%	9	-100.38%	-326%	39	0.00%	0%	0	0.00%	0%	0
25	0.00%	0%	0	-4.20%	-3%	9	-105.75%	-238%	27	0.00%	0%	0	0.00%	0%	0
26	0.00%	0%	0	-4.72%	-3%	8	-112.24%	-150%	16	0.00%	0%	0	0.00%	0%	0

Appendix E.3.B Results for dynamic comparison level tests: restricted sample

Continued: Length = ten filters; Initial comparison level = 10 and 5 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.1	1	6.90	0.0000	MTB	≥	3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
0.04	2	7.98	0.0000	CH_DEP	≥	0.3359	6.73	6.29%	33	-23.03%	27.80%	-0.67	-1.22
-0.02	3	8.33	0.0000	INVITA(-12m)	≤	0.1681	5.87	5.48%	32	-29.39%	28.89%	-1.00	-1.39
-0.08	4	7.92	0.0000	DY	≤	0.0452	5.08	4.75%	32	-34.62%	30.54%	-1.22	-1.49
-0.14	5	6.66	0.0000	POS_OP	≤	15.0000	4.05	3.79%	32	-43.45%	37.43%	-1.25	-1.45
-0.2	6	5.85	0.0000	AGE	≤	14.0056	3.00	2.80%	32	-51.49%	51.93%	-0.90	-1.20
-0.26	7	5.36	0.0000	CH_TA	≥	-0.1104	2.75	2.57%	32	-54.53%	52.72%	-0.97	-1.24
-0.32	8	4.96	0.0000	CH_TA(-9m)	≥	-0.0148	2.10	1.96%	28	-63.53%	51.30%	-1.36	-1.45
-0.38	9	4.67	0.0000	RSTRENGTH_ALSI	≤	0.8284	1.80	1.68%	26	-68.31%	53.12%	-1.45	-1.50
-0.44	10	4.47	0.0000	POS_NET(-9m)	≥	5.0000	2.07	1.93%	25	-68.72%	53.11%	-1.44	-1.50
-0.5	11	4.14	0.0000	EARNG_12(-6m)	≥	-0.0049	1.60	1.50%	23	-70.03%	54.79%	-1.39	-1.48
-0.5	12	4.04	0.0001	MAXP_24	≤	0.9431	1.58	1.48%	22	-69.48%	54.09%	-1.38	-1.49
-0.5	13	3.94	0.0001	CH_ARISALES	≥	-0.2913	1.57	1.46%	21	-69.32%	55.08%	-1.31	-1.46
-0.5	14	3.83	0.0001	EPS	≤	1.1900	1.37	1.28%	20	-69.73%	53.62%	-1.38	-1.51
-0.5	15	3.72	0.0001	EARNG_12(-9m)	≥	-0.0180	1.17	1.09%	19	-70.13%	56.76%	-1.23	-1.44
-0.5	16	3.64	0.0002	WRSTRENGTH_ALSI(-9m)	≥	0.1548	1.15	1.07%	18	-70.70%	56.57%	-1.24	-1.45
-0.5	17	3.56	0.0002	ACCITA(-12m)	≤	-0.1283	1.10	1.03%	17	-71.37%	57.11%	-1.23	-1.45
-0.5	18	3.44	0.0003	POS_SALES	≤	7.0000	1.08	1.01%	16	-71.67%	57.35%	-1.21	-1.45
-0.5	19	3.31	0.0005	SDEV_VOL(-9m)	≤	1.0505	1.07	1.00%	15	-71.27%	58.09%	-1.15	-1.42
-0.5	20	3.14	0.0009	MOM_18	≤	0.3589	0.87	0.81%	13	-74.48%	65.02%	-0.99	-1.32
-0.5	21	3.01	0.0014	MOM_12	≤	0.5352	0.87	0.81%	12	-75.61%	64.90%	-1.01	-1.34
-0.5	22	2.80	0.0026	MOM_24	≤	0.2214	0.78	0.73%	10	-79.28%	65.44%	-1.08	-1.38
-0.5	23	2.65	0.0040	MAXP_12	≤	0.9457	0.75	0.70%	9	-79.50%	66.22%	-1.05	-1.37
-0.5	24	2.49	0.0065	WRSTRENGTH_ALSI	≤	0.4038	0.73	0.69%	8	-79.67%	67.01%	-1.02	-1.35
-0.5	25	2.31	0.0105	POS_NET(-12m)	≥	5.0000	0.72	0.67%	7	-78.51%	67.45%	-0.97	-1.33
-0.5	26	2.10	0.0180	SALESICASH	≤	10.7330	0.50	0.47%	6	-84.54%	63.06%	-1.27	-1.51
-0.5	27	1.89	0.0296	VOL_12(-9m)	≤	1.3094	0.48	0.45%	5	-82.62%	61.36%	-1.26	-1.52
-0.5	28	1.64	0.0502	CH_INV	≥	0.1292	0.28	0.26%	4	-81.52%	47.81%	-2.00	-1.94
-0.5	29	1.34	0.0907	VOL_6(-9m)	≤	1.0042	0.27	0.25%	3	-80.36%	47.81%	-1.93	-1.91
-0.5	30	0.89	0.1856	MOM_6(-12m)	≥	-0.1273	0.23	0.22%	2	-84.14%	47.85%	-2.08	-1.99

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.76%	1680%	886
2	-50.71%	-1487%	352	-5.68%	-222%	470	-20.10%	-600%	358	-26.06%	-945%	435	-11.55%	-155%	161
3	-50.80%	-1287%	304	-19.01%	-486%	307	-25.81%	-721%	335	-31.74%	-1074%	406	-10.18%	-136%	160
4	-50.80%	-1287%	304	-20.42%	-512%	301	-31.89%	-688%	259	-43.28%	-1115%	309	-4.61%	-33%	87
5	-57.56%	-1242%	259	-26.48%	-532%	241	-59.73%	-587%	118	-51.33%	-898%	210	0.13%	1%	72
6	-57.56%	-1242%	259	-29.46%	-577%	235	-81.20%	-616%	91	-82.39%	-742%	108	110.89%	139%	15
7	-62.76%	-1119%	214	-33.08%	-607%	220	-81.20%	-616%	91	-82.39%	-742%	108	110.89%	139%	15
8	-62.76%	-842%	161	-42.00%	-378%	108	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
9	-84.92%	-793%	112	-20.68%	-126%	73	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
10	-87.16%	-668%	92	-21.78%	-125%	69	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
11	-95.91%	-575%	72	-24.52%	-133%	65	-75.34%	-477%	76	-83.23%	-583%	84	68.77%	17%	3
12	-96.86%	-500%	62	-23.73%	-125%	63	-75.34%	-477%	76	-83.23%	-583%	84	68.77%	17%	3
13	-97.47%	-431%	53	-24.26%	-121%	60	-75.34%	-477%	76	-83.23%	-583%	84	68.77%	17%	3
14	-104.28%	-365%	42	-25.74%	-127%	59	-75.34%	-477%	76	-83.23%	-583%	84	68.77%	17%	3
15	-114.99%	-316%	33	-24.43%	-114%	56	-75.34%	-477%	76	-83.23%	-583%	84	68.77%	17%	3
16	-114.99%	-316%	33	-24.43%	-114%	56	-81.00%	-486%	72	-81.32%	-515%	76	68.77%	17%	3
17	-114.99%	-316%	33	-26.49%	-106%	48	-76.95%	-436%	68	-81.32%	-515%	76	68.77%	17%	3
18	-114.99%	-316%	33	-27.98%	-98%	42	-73.18%	-378%	62	-81.32%	-515%	76	68.77%	17%	3
19	-114.99%	-316%	33	-27.27%	-86%	38	-69.15%	-311%	54	-81.32%	-515%	76	68.77%	17%	3
20	-174.09%	-174%	12	-34.44%	-100%	35	-78.02%	-332%	51	-81.28%	-454%	67	68.77%	17%	3
21	-174.09%	-174%	12	-34.44%	-100%	35	-81.12%	-331%	49	-83.02%	-394%	57	68.77%	17%	3
22	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-330%	38	-77.59%	-284%	44	68.77%	17%	3
23	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-322%	37	-78.57%	-216%	33	68.77%	17%	3
24	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-322%	37	-78.91%	-138%	21	68.77%	17%	3
25	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	-78.91%	-138%	21	68.77%	17%	3
26	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
27	-167.01%	-56%	4	-22.63%	-36%	19	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
28	0.00%	0%	0	-4.88%	-4%	11	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
29	0.00%	0%	0	-4.20%	-3%	9	-105.75%	-238%	27	0.00%	0%	0	0.00%	0%	0
30	0.00%	0%	0	6.61%	2%	4	-102.29%	-170%	20	0.00%	0%	0	0.00%	0%	0

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.05	1	4.88	0.0000	MTB	≥	3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
-0.005	2	7.27	0.0000	CH_DEP	≥	0.3359	6.73	6.29%	33	-23.03%	27.80%	-0.67	-1.22
-0.06	3	7.59	0.0000	INVITA(-12m)	≤	0.1681	5.87	5.48%	32	-29.39%	28.89%	-1.00	-1.39
-0.115	4	7.16	0.0000	DY	≤	0.0253	4.25	3.97%	32	-40.65%	41.68%	-0.90	-1.24
-0.17	5	6.29	0.0000	POS_OP	≤	15.0000	3.25	3.04%	32	-49.53%	49.16%	-0.94	-1.23
-0.225	6	5.57	0.0000	CH_TA	≥	-0.1104	3.00	2.80%	32	-52.19%	50.03%	-1.00	-1.26
-0.28	7	5.20	0.0000	AGE	≤	14.0056	2.75	2.57%	32	-54.53%	52.72%	-0.97	-1.24
-0.335	8	4.92	0.0000	CH_TA(-9m)	≥	-0.0148	2.10	1.96%	28	-63.53%	51.30%	-1.36	-1.45
-0.39	9	4.65	0.0000	RSTRENGTH_ALSI	≤	0.8284	1.80	1.68%	26	-68.31%	53.12%	-1.45	-1.50
-0.445	10	4.39	0.0000	INVITA	≤	0.0375	1.73	1.62%	24	-70.93%	52.35%	-1.58	-1.57
-0.5	11	4.12	0.0000	CH_ARISALES	≥	-0.2913	1.48	1.39%	23	-70.84%	53.41%	-1.50	-1.54
-0.5	12	4.01	0.0001	POS_NET(-9m)	≥	5.0000	1.42	1.32%	22	-69.89%	52.82%	-1.47	-1.54
-0.5	13	3.91	0.0001	MAXP_24	≤	0.8877	1.42	1.32%	21	-70.34%	53.88%	-1.41	-1.52
-0.5	14	3.80	0.0001	MOM_12	≤	0.5352	1.40	1.31%	20	-70.82%	53.83%	-1.41	-1.53
-0.5	15	3.68	0.0001	CH_INV	≥	-0.4171	1.18	1.11%	19	-70.93%	55.89%	-1.30	-1.47
-0.5	16	3.61	0.0002	MOM_18	≤	0.3589	0.97	0.90%	17	-74.02%	63.41%	-1.08	-1.35
-0.5	17	3.50	0.0003	POS_SALES	≤	7.0000	0.95	0.89%	16	-74.49%	63.47%	-1.08	-1.35
-0.5	18	3.39	0.0004	EARNG_12(-6m)	≥	-0.0049	0.93	0.87%	15	-73.63%	63.81%	-1.03	-1.33
-0.5	19	3.27	0.0006	WRSTRENGTH_ALSI(-9m)	≥	0.1548	0.90	0.84%	14	-74.63%	63.51%	-1.06	-1.35
-0.5	20	3.14	0.0009	EARNG_12(-12m)	≥	-0.0202	0.85	0.79%	13	-75.82%	64.19%	-1.06	-1.36
-0.5	21	3.01	0.0014	SDEV_VOL(-9m)	≤	1.0505	0.85	0.79%	12	-75.61%	64.90%	-1.01	-1.34
-0.5	22	2.80	0.0026	MOM_24	≤	0.2214	0.75	0.70%	10	-79.28%	65.44%	-1.08	-1.38
-0.5	23	2.65	0.0040	MAXP_12	≤	0.9457	0.73	0.69%	9	-79.50%	66.22%	-1.05	-1.37
-0.5	24	2.49	0.0065	WRSTRENGTH_ALSI	≤	0.4038	0.72	0.67%	8	-79.67%	67.01%	-1.02	-1.35
-0.5	25	2.31	0.0105	POS_NET(-12m)	≥	5.0000	0.70	0.65%	7	-78.51%	67.45%	-0.97	-1.33
-0.5	26	2.10	0.0180	SALESICASH	≤	10.7330	0.48	0.45%	6	-84.54%	63.06%	-1.27	-1.51
-0.5	27	1.89	0.0296	VOL_12(-9m)	≤	1.3094	0.47	0.44%	5	-82.62%	61.36%	-1.26	-1.52
-0.5	28	1.64	0.0502	CH_CAPGEAR	≥	-0.1839	0.27	0.25%	4	-81.52%	47.81%	-2.00	-1.94
-0.5	29	1.34	0.0907	VOL_6(-9m)	≤	1.0042	0.27	0.25%	3	-80.36%	47.81%	-1.93	-1.91
-0.5	30	0.89	0.1856	MOM_6(-12m)	≥	-0.1273	0.23	0.22%	2	-84.14%	47.85%	-2.08	-1.99

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.76%	1680%	886
2	-50.71%	-1487%	352	-5.68%	-222%	470	-20.10%	-600%	358	-26.06%	-945%	435	-11.55%	-155%	161
3	-50.80%	-1287%	304	-19.01%	-486%	307	-25.81%	-721%	335	-31.74%	-1074%	406	-10.18%	-136%	160
4	-50.80%	-1287%	304	-25.89%	-559%	259	-38.86%	-654%	202	-55.44%	-1049%	227	40.15%	94%	28
5	-57.56%	-1242%	259	-29.46%	-577%	235	-68.19%	-619%	109	-71.32%	-820%	138	110.89%	139%	15
6	-62.76%	-1119%	214	-33.08%	-607%	220	-68.19%	-619%	109	-71.32%	-820%	138	110.89%	139%	15
7	-62.76%	-1119%	214	-33.08%	-607%	220	-81.20%	-616%	91	-82.39%	-742%	108	110.89%	139%	15
8	-62.76%	-842%	161	-42.00%	-378%	108	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
9	-84.92%	-793%	112	-20.68%	-126%	73	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
10	-97.02%	-568%	70	-26.39%	-147%	67	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
11	-97.58%	-496%	61	-27.02%	-144%	64	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
12	-95.07%	-412%	52	-26.47%	-135%	61	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
13	-99.45%	-340%	41	-29.44%	-147%	60	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
14	-99.45%	-340%	41	-29.44%	-147%	60	-78.86%	-565%	86	-84.83%	-523%	74	68.77%	17%	3
15	-104.46%	-270%	31	-30.76%	-149%	58	-78.86%	-565%	86	-84.83%	-523%	74	68.77%	17%	3
16	-174.09%	-174%	12	-29.00%	-128%	53	-84.65%	-586%	83	-85.27%	-462%	65	68.77%	17%	3
17	-174.09%	-174%	12	-30.66%	-120%	47	-82.21%	-528%	77	-85.27%	-462%	65	68.77%	17%	3
18	-174.09%	-174%	12	-30.66%	-120%	47	-81.09%	-439%	65	-85.27%	-462%	65	68.77%	17%	3
19	-174.09%	-174%	12	-30.66%	-120%	47	-88.15%	-448%	61	-83.02%	-394%	57	68.77%	17%	3
20	-174.09%	-174%	12	-34.46%	-112%	39	-83.82%	-398%	57	-83.02%	-394%	57	68.77%	17%	3
21	-174.09%	-174%	12	-34.44%	-100%	35	-81.12%	-331%	49	-83.02%	-394%	57	68.77%	17%	3
22	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-330%	38	-77.59%	-284%	44	68.77%	17%	3
23	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-322%	37	-78.57%	-216%	33	68.77%	17%	3
24	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-322%	37	-78.91%	-138%	21	68.77%	17%	3
25	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	-78.91%	-138%	21	68.77%	17%	3
26	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
27	-167.01%	-56%	4	-22.63%	-36%	19	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
28	0.00%	0%	0	-4.88%	-4%	11	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
29	0.00%	0%	0	-4.20%	-3%	9	-105.75%	-238%	27	0.00%	0%	0	0.00%	0%	0
30	0.00%	0%	0	6.61%	2%	4	-102.29%	-170%	20	0.00%	0%	0	0.00%	0%	0

Appendix E.3.B Results for dynamic comparison level tests: restricted sample

Continued: Length = ten filters; Initial comparison level = 0 and −5 percent

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0	1	2.59	0.0048	MTB	≥ 3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
-0.05	2	6.44	0.0000	CH_DEP	≥ 0.5059	5.93	5.55%	33	-25.99%	27.76%	-0.86	-1.33
-0.1	3	7.44	0.0000	INVITA(-12m)	≤ 0.1681	5.07	4.74%	32	-34.16%	29.38%	-1.30	-1.54
-0.15	4	6.56	0.0000	DY	≤ 0.0203	3.73	3.49%	32	-46.88%	47.29%	-0.93	-1.22
-0.2	5	5.86	0.0000	CH_TA	≥ -0.1104	3.20	2.99%	32	-51.02%	49.32%	-0.99	-1.26
-0.25	6	5.29	0.0000	POS_OP	≤ 15.0000	2.77	2.59%	32	-53.59%	51.31%	-1.00	-1.26
-0.3	7	5.10	0.0000	CH_TA(-9m)	≥ -0.0148	2.10	1.96%	28	-63.53%	51.30%	-1.38	-1.45
-0.35	8	4.78	0.0000	CH_ARtSALES	≥ -0.2913	2.08	1.95%	27	-63.26%	51.44%	-1.34	-1.44
-0.4	9	4.54	0.0000	RSTRENGTH_ALSI	≤ 0.8284	1.78	1.67%	25	-68.14%	54.05%	-1.39	-1.47
-0.45	10	4.31	0.0000	INVITA	≤ 0.0375	1.72	1.60%	23	-70.84%	53.41%	-1.52	-1.54
-0.5	11	4.01	0.0001	POS_NET(-9m)	≥ 5.0000	1.42	1.32%	22	-69.89%	52.82%	-1.49	-1.54
-0.5	12	3.91	0.0001	MAXP_24	≤ 0.8877	1.42	1.32%	21	-70.34%	53.88%	-1.43	-1.52
-0.5	13	3.80	0.0001	MOM_12	≤ 0.5352	1.42	1.32%	20	-70.82%	53.83%	-1.43	-1.53
-0.5	14	3.68	0.0001	CH_INV	≥ -0.4171	1.20	1.12%	19	-70.93%	55.89%	-1.32	-1.47
-0.5	15	3.61	0.0002	MOM_18	≤ 0.3589	0.97	0.90%	17	-74.02%	63.41%	-1.10	-1.35
-0.5	16	3.50	0.0003	POS_SALES	≤ 7.0000	0.95	0.89%	16	-74.49%	63.47%	-1.10	-1.35
-0.5	17	3.39	0.0004	EARNG_12(-6m)	≥ -0.0049	0.93	0.87%	15	-73.63%	63.81%	-1.05	-1.33
-0.5	18	3.27	0.0006	WRSTRENGTH_ALSI(-9m)	≥ 0.1548	0.93	0.87%	14	-74.63%	63.51%	-1.07	-1.35
-0.5	19	3.14	0.0009	EARNG_12(-12m)	≥ -0.0202	0.85	0.79%	13	-75.82%	64.19%	-1.07	-1.36
-0.5	20	3.01	0.0014	SDEV_VOL(-9m)	≤ 1.0505	0.85	0.79%	12	-75.61%	64.90%	-1.03	-1.34
-0.5	21	2.80	0.0026	MOM_24	≤ 0.2214	0.75	0.70%	10	-79.28%	65.44%	-1.10	-1.38
-0.5	22	2.65	0.0040	MAXP_12	≤ 0.9457	0.73	0.69%	9	-79.50%	66.22%	-1.06	-1.37
-0.5	23	2.49	0.0065	WRSTRENGTH_ALSI	≤ 0.4038	0.72	0.67%	8	-79.67%	67.01%	-1.03	-1.35
-0.5	24	2.31	0.0105	POS_NET(-12m)	≥ 5.0000	0.70	0.65%	7	-78.51%	67.45%	-0.98	-1.33
-0.5	25	2.10	0.0180	AGE	≤ 3.5611	0.48	0.45%	6	-84.54%	63.06%	-1.28	-1.51
-0.5	26	1.89	0.0296	VOL_12(-9m)	≤ 1.3094	0.47	0.44%	5	-82.62%	61.36%	-1.28	-1.52
-0.5	27	1.64	0.0502	CH_CAPGEAR	≥ -0.1839	0.27	0.25%	4	-81.52%	47.81%	-2.03	-1.94
-0.5	28	1.34	0.0907	VOL_6(-9m)	≤ 1.0042	0.27	0.25%	3	-80.36%	47.81%	-1.95	-1.91
-0.5	29	0.89	0.1856	MOM_6(-12m)	≥ -0.1273	0.23	0.22%	2	-84.14%	47.85%	-2.11	-1.99

No	2000			2001			2002			2003			2004		
1	-16.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-50.59%	-1459%	346	-6.81%	-260%	458	-23.73%	-583%	295	-34.99%	-1003%	344	-2.80%	-22%	93
3	-50.67%	-1258%	298	-21.30%	-524%	295	-31.07%	-704%	272	-43.14%	-1132%	315	-0.32%	-2%	92
4	-55.86%	-1229%	264	-29.09%	-560%	231	-48.76%	-658%	162	-73.43%	-881%	144	41.64%	94%	27
5	-60.59%	-1106%	219	-33.04%	-592%	215	-59.10%	-630%	128	-73.13%	-871%	143	110.89%	139%	15
6	-62.91%	-1090%	208	-33.58%	-599%	214	-70.98%	-603%	102	-78.68%	-793%	121	110.89%	139%	15
7	-62.75%	-842%	161	-42.00%	-378%	108	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
8	-60.94%	-772%	152	-42.82%	-375%	105	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
9	-84.19%	-723%	103	-21.00%	-123%	70	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
10	-97.58%	-496%	61	-27.02%	-144%	64	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
11	-95.07%	-412%	52	-26.47%	-135%	61	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
12	-99.45%	-340%	41	-29.44%	-147%	60	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
13	-99.45%	-340%	41	-29.44%	-147%	60	-78.86%	-565%	86	-84.83%	-523%	74	68.77%	17%	3
14	-104.46%	-270%	31	-30.76%	-149%	58	-78.86%	-565%	86	-84.83%	-523%	74	68.77%	17%	3
15	-174.09%	-174%	12	-29.00%	-128%	53	-84.66%	-586%	83	-85.27%	-462%	65	68.77%	17%	3
16	-174.09%	-174%	12	-30.65%	-120%	47	-82.21%	-528%	77	-85.27%	-462%	65	68.77%	17%	3
17	-174.09%	-174%	12	-30.65%	-120%	47	-81.09%	-439%	65	-85.27%	-462%	65	68.77%	17%	3
18	-174.09%	-174%	12	-30.65%	-120%	47	-88.16%	-448%	61	-83.02%	-394%	57	68.77%	17%	3
19	-174.09%	-174%	12	-34.46%	-112%	39	-83.82%	-398%	57	-83.02%	-394%	57	68.77%	17%	3
20	-174.09%	-174%	12	-34.44%	-100%	35	-81.12%	-331%	49	-83.02%	-394%	57	68.77%	17%	3
21	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-330%	38	-77.59%	-284%	44	68.77%	17%	3
22	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-322%	37	-78.57%	-216%	33	68.77%	17%	3
23	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-322%	37	-78.91%	-138%	21	68.77%	17%	3
24	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	-78.91%	-138%	21	68.77%	17%	3
25	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
26	-167.01%	-56%	4	-22.63%	-36%	19	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
27	0.00%	0%	0	-4.88%	-4%	11	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
28	0.00%	0%	0	-4.20%	-3%	9	-105.76%	-238%	27	0.00%	0%	0	0.00%	0%	0
29	0.00%	0%	0	6.61%	2%	4	-102.29%	-170%	20	0.00%	0%	0	0.00%	0%	0

CL	No	Z-stat	P-value	Variable	Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
-0.05	1	0.20	0.4213	SALESTCASH(-12m)	≤ 0.4647	2.97	2.77%	9	8.01%	31.74%	0.06	-0.09
-0.095	2	4.88	0.0000	CH_TA(-9m)	≥ 0.3650	1.52	1.42%	9	-31.97%	35.72%	-0.78	-1.19
-0.14	3	5.26	0.0000	CH_TA	≥ -0.1104	1.37	1.28%	9	-40.95%	35.68%	-1.26	-1.45
-0.185	4	4.95	0.0000	MAXP_24	≤ 0.9431	1.35	1.26%	9	-41.34%	36.41%	-1.21	-1.43
-0.23	5	4.70	0.0000	CH_TA(-12m)	≥ 0.0866	1.10	1.03%	7	-43.41%	43.03%	-0.94	-1.26
-0.275	6	4.46	0.0000	DY	≤ 0.0303	1.00	0.93%	7	-45.52%	41.88%	-1.08	-1.34
-0.32	7	4.19	0.0000	MAXP_12	≤ 0.9457	0.98	0.92%	6	-45.28%	41.87%	-1.05	-1.34
-0.365	8	3.86	0.0001	MTB	≥ 0.6200	0.93	0.87%	6	-48.64%	44.00%	-1.08	-1.35
-0.41	9	3.44	0.0003	CH_DEP	≥ -0.1744	0.72	0.67%	6	-49.75%	38.13%	-1.49	-1.58
-0.455	10	2.03	0.0212	SDEV_VOL(-9m)	≤ 0.2232	0.60	0.56%	5	-55.69%	46.07%	-1.26	-1.43
-0.5	11	1.64	0.0502	EY	≤ 0.1465	0.47	0.44%	4	-63.95%	57.13%	-1.06	-1.30
-0.5	12	1.34	0.0907	AGE	≤ 3.5611	0.27	0.25%	3	-67.99%	68.62%	-0.82	-1.15
-0.5	13	0.89	0.1856	MOM_24	≤ 0.5919	0.23	0.22%	2	-65.39%	71.05%	-0.70	-1.07

No	2000			2001			2002			2003			2004		
1	21.71%	516%	285	-17.65%	-852%	579	42.19%	1519%	432	-24.17%	-326%	162	25.92%	168%	78
2	-67.51%	-743%	132	-33.16%	-580%	210	-14.44%	-108%	90	-35.24%	-264%	90	23.51%	129%	66
3	-67.51%	-743%	132	-33.16%	-580%	210	-14.44%	-108%	90	-62.85%	-236%	45	116.88%	29%	3
4	-72.22%	-668%	111	-34.08%	-588%	207	-14.44%	-108%	90	-62.86%	-236%	45	116.88%	29%	3
5	-70.12%	-526%	90	-35.41%	-602%	204	-14.44%	-108%	90	-196.20%	-196%	12	0.00%	0%	0
6	-67.10%	-386%	69	-42.24%	-539%	153	-14.44%	-108%	90	-196.20%	-196%	12	0.00%	0%	0
7	-67.10%	-386%	69	-42.24%	-539%	153	-15.14%	-105%	83	-253.98%	-148%	7	0.00%	0%	0
8	-71.16%	-403%	68	-40.91%	-416%	122	-1.53%	-5%	43	-253.98%	-148%	7	0.00%	0%	0
9	-71.16%	-403%	68	-40.91%	-416%	122	-35.23%	-76%	26	0.00%	0%	0	0.00%	0%	0
10	-97.41%	-235%	29	-37.67%	-201%	64	-36.87%	-9%	3	0.00%	0%	0	0.00%	0%	0
11	-100.16%	-225%	27	-17.41%	-30%	21	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
12	-97.78%	-196%	24	-8.41%	-8%	12	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
13	-100.52%	-126%	15	-6.85%	-5%	9	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0

Appendix E.3.C Results for dynamic comparison level tests: restricted sample

Continued: Length = fifteen filters; Initial comparison level = 20 and 15 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.2	1	10.26	0.0000	MTB	≥	2.4700	28.42	26.56%	106	8.98%	23.73%	0.15	-0.07
0.1533	2	10.45	0.0000	MAXP_12	≤	0.9943	24.25	22.66%	92	2.85%	23.92%	0.01	-0.33
0.1067	3	9.58	0.0000	EY	≤	0.1129	21.32	19.92%	83	-0.75%	24.69%	0.00	-0.46
0.06	4	8.79	0.0000	SALESTCASH	≤	7.2024	13.47	12.59%	48	-11.95%	25.29%	-0.21	-0.90
0.0133	5	9.01	0.0000	AGE	≤	14.0056	10.37	9.69%	48	-22.50%	25.52%	-0.73	-1.30
-0.0333	6	8.72	0.0000	DY	≤	0.0352	9.95	9.30%	48	-25.36%	27.14%	-0.81	-1.33
-0.08	7	7.82	0.0000	CH_TA	≥	0.2693	5.07	4.74%	26	-34.28%	33.70%	-0.94	-1.34
-0.1267	8	7.52	0.0000	SALESTCASH(-9m)	≤	8.1046	4.70	4.39%	26	-36.86%	35.83%	-0.94	-1.33
-0.1733	9	6.88	0.0000	POS_ROE	≤	17.0000	3.97	3.71%	25	-42.44%	36.45%	-1.19	-1.46
-0.22	10	5.93	0.0000	SALESTCASH(-12m)	≤	11.2449	4.47	4.17%	25	-42.85%	36.32%	-1.21	-1.47
-0.2667	11	5.42	0.0000	EPS	≤	1.1900	3.07	2.87%	24	-47.99%	42.60%	-1.08	-1.37
-0.3133	12	4.81	0.0000	ROE(-9m)	≥	0.0497	2.43	2.27%	21	-53.79%	43.38%	-1.29	-1.47
-0.36	13	4.52	0.0000	CH_ARTSALES	≥	-0.2913	2.02	1.88%	21	-58.35%	50.05%	-1.13	-1.37
-0.4067	14	4.47	0.0000	RSTRENGTH_ALSI	≤	0.8284	1.73	1.62%	21	-62.48%	51.80%	-1.19	-1.40
-0.4533	15	4.06	0.0000	INVITA	≤	0.0572	1.48	1.39%	20	-66.36%	54.27%	-1.21	-1.40
-0.5	16	3.79	0.0001	POS_SALES	≤	8.0000	1.30	1.21%	19	-69.39%	54.80%	-1.28	-1.44
-0.5	17	3.68	0.0001	MOM_12	≤	0.5352	1.30	1.21%	18	-69.90%	56.51%	-1.20	-1.41
-0.5	18	3.57	0.0002	MAXP_24	≤	0.8877	1.28	1.20%	17	-69.71%	56.51%	-1.18	-1.41
-0.5	19	3.46	0.0003	WCITA	≥	0.1666	1.08	1.01%	16	-69.79%	57.89%	-1.11	-1.37
-0.5	20	3.34	0.0005	WRSTRENGTH_ALSI	≤	0.6795	1.07	1.00%	15	-69.73%	57.89%	-1.10	-1.38
-0.5	21	3.14	0.0009	EARNG_12(-6m)	≥	-0.0049	1.05	0.98%	13	-71.07%	58.85%	-1.09	-1.37
-0.5	22	3.02	0.0013	GM	≤	0.2665	0.83	0.78%	12	-74.07%	65.81%	-0.94	-1.27
-0.5	23	2.89	0.0020	MOM_18	≤	0.9082	0.82	0.76%	11	-74.38%	66.54%	-0.91	-1.26
-0.5	24	2.75	0.0030	ACCITA(-9m)	≤	-0.0396	0.75	0.70%	10	-74.62%	65.24%	-0.94	-1.30
-0.5	25	2.61	0.0046	WRSTRENGTH_ALSI(-9m)	≥	0.2764	0.73	0.69%	9	-73.08%	66.06%	-0.87	-1.25
-0.5	26	2.45	0.0072	VOL_6	≤	1.1079	0.72	0.67%	8	-71.34%	66.00%	-0.82	-1.23
-0.5	27	2.28	0.0113	VOL_12	≤	0.8476	0.68	0.64%	7	-68.82%	67.19%	-0.73	-1.17
-0.5	28	2.10	0.0180	POS_OP	≤	13.0000	0.67	0.62%	6	-64.61%	66.87%	-0.64	-1.11
-0.5	29	1.89	0.0296	VOL_12(-9m)	≤	1.1487	0.65	0.61%	5	-65.82%	67.96%	-0.64	-1.11
-0.5	30	1.64	0.0502	VOL_6(-9m)	≤	1.4669	0.43	0.40%	4	-59.62%	55.36%	-0.78	-1.24
-0.5	31	1.34	0.0907	MOM_6(-12m)	≥	-0.0665	0.42	0.39%	3	-58.53%	56.42%	-0.72	-1.20
-0.5	32	0.89	0.1856	MOM_24	≤	-0.3342	0.22	0.20%	2	-55.82%	47.41%	-0.91	-1.39

No	2000			2001			2002			2003			2004		
1	-10.66%	-1706%	1939	-1.77%	-429%	2914	25.17%	5035%	2401	11.91%	2422%	2441	24.04%	3079%	1537
2	-14.62%	-2001%	1653	-4.25%	-848%	2393	20.66%	2672%	1552	8.24%	1308%	1903	11.40%	865%	911
3	-13.96%	-1808%	1554	-8.87%	-1587%	2146	28.78%	2919%	1217	-7.17%	-795%	1329	14.79%	836%	678
4	-14.29%	-1219%	1024	-20.91%	-2097%	1203	19.65%	990%	605	-16.90%	-766%	578	-27.33%	-542%	238
5	-24.82%	-1822%	881	-26.89%	-2243%	1001	-4.01%	-162%	485	-35.60%	-857%	289	-12.67%	-135%	128
6	-25.94%	-1883%	871	-29.66%	-2375%	964	-8.36%	-286%	410	-39.73%	-805%	243	-16.07%	-155%	116
7	-49.01%	-1164%	285	-30.83%	-974%	379	-15.41%	-288%	224	-40.41%	-761%	226	-33.61%	-207%	74
8	-49.01%	-1164%	285	-30.83%	-974%	379	-18.74%	-270%	173	-45.60%	-756%	199	-40.07%	-227%	68
9	-67.13%	-1175%	210	-29.18%	-642%	264	-21.66%	-206%	114	-47.01%	-721%	184	-40.07%	-227%	68
10	-67.13%	-1175%	210	-29.18%	-642%	264	-23.26%	-219%	113	-48.10%	-693%	173	-40.07%	-227%	68
11	-66.89%	-1109%	199	-29.53%	-647%	263	-42.70%	-235%	66	-83.19%	-381%	55	-40.39%	-219%	65
12	-71.31%	-915%	154	-36.47%	-398%	131	-35.15%	-185%	63	-83.19%	-381%	55	-40.39%	-219%	65
13	-71.31%	-915%	154	-27.39%	-251%	110	-159.09%	-159%	12	-83.19%	-381%	55	-40.39%	-219%	65
14	-88.69%	-916%	124	-16.89%	-122%	92	-159.09%	-159%	12	-88.34%	-331%	45	-42.05%	-221%	63
15	-92.41%	-608%	79	-32.21%	-207%	77	-159.09%	-159%	12	-88.34%	-331%	45	-42.05%	-221%	63
16	-92.41%	-608%	79	-32.21%	-207%	77	-159.09%	-159%	12	-138.64%	-243%	21	-40.22%	-171%	51
17	-94.62%	-536%	68	-34.62%	-219%	76	-159.09%	-159%	12	-138.64%	-243%	21	-40.22%	-171%	51
18	-94.62%	-536%	68	-34.62%	-219%	76	-159.09%	-159%	12	-135.69%	-192%	17	-41.32%	-148%	43
19	-96.47%	-466%	58	-35.80%	-221%	74	-159.09%	-159%	12	-135.69%	-192%	17	-41.32%	-148%	43
20	-96.47%	-466%	58	-35.80%	-221%	74	-159.09%	-159%	12	-124.35%	-145%	14	-43.93%	-124%	34
21	-116.37%	-356%	37	-35.61%	-211%	71	-159.09%	-159%	12	-124.35%	-145%	14	-43.93%	-124%	34
22	-168.04%	-280%	20	-33.78%	-180%	64	-159.09%	-159%	12	-124.35%	-145%	14	-43.93%	-124%	34
23	-168.04%	-280%	20	-33.78%	-180%	64	-159.09%	-159%	12	-164.15%	-109%	8	-38.32%	-89%	28
24	-168.04%	-280%	20	-33.78%	-180%	64	-159.09%	-159%	12	-297.73%	-74%	3	-29.96%	-52%	21
25	-180.87%	-211%	14	-33.26%	-161%	58	-159.09%	-159%	12	-297.73%	-74%	3	-29.96%	-52%	21
26	-186.41%	-155%	10	-31.06%	-129%	50	-159.09%	-159%	12	-297.73%	-74%	3	-29.96%	-52%	21
27	-212.83%	-89%	5	-29.90%	-107%	43	-159.09%	-159%	12	-297.73%	-74%	3	-29.96%	-52%	21
28	-221.52%	-37%	2	-22.86%	-65%	34	-159.09%	-159%	12	-297.73%	-74%	3	-29.96%	-52%	21
29	-221.52%	-37%	2	-30.27%	-63%	25	-136.37%	-102%	9	-297.73%	-74%	3	-29.96%	-52%	21
30	0.00%	0%	0	-7.49%	-9%	15	-136.37%	-102%	9	-297.73%	-74%	3	-29.96%	-52%	21
31	0.00%	0%	0	-7.49%	-9%	15	-136.37%	-102%	9	-248.66%	-41%	2	-27.03%	-23%	10
32	0.00%	0%	0	-7.49%	-9%	15	-136.37%	-102%	9	0.00%	0%	0	0.00%	0%	0

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.15	1	8.65	0.0000	MTB	≥	3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
0.1067	2	8.91	0.0000	AGE	≤	4.8667	5.73	5.36%	35	-21.72%	26.35%	-0.67	-1.22
0.0633	3	8.93	0.0000	DY	≤	0.0452	5.07	4.74%	35	-27.14%	27.11%	-0.97	-1.39
0.02	4	8.58	0.0000	EY	≤	0.1465	4.97	4.64%	33	-28.40%	27.99%	-0.98	-1.39
-0.0233	5	7.74	0.0000	SALESTCASH	≤	24.8555	4.50	4.21%	29	-30.88%	29.64%	-1.01	-1.40
-0.0667	6	6.83	0.0000	SALESTCASH(-9m)	≤	8.1046	3.60	3.36%	25	-34.45%	24.35%	-1.84	-1.85
-0.11	7	5.98	0.0000	EPS	≤	0.8100	2.70	2.52%	16	-38.99%	27.62%	-1.80	-1.79
-0.1533	8	5.29	0.0000	RSTRENGTH_ALSI	≤	0.8284	2.07	1.93%	13	-41.35%	27.16%	-2.06	-1.91
-0.1967	9	4.41	0.0000	MAXP_24	≤	0.9984	2.07	1.93%	12	-40.06%	26.60%	-1.99	-1.90
-0.24	10	3.53	0.0002	INVITA	≤	0.0375	1.90	1.78%	12	-49.60%	28.46%	-2.62	-2.11
-0.2833	11	3.31	0.0005	SDEV_VOL(-9m)	≤	1.0505	1.42	1.32%	11	-60.72%	48.48%	-1.33	-1.47
-0.3267	12	3.07	0.0011	ROE	≥	0.0642	1.33	1.25%	11	-70.09%	51.82%	-1.53	-1.56
-0.37	13	2.94	0.0017	CH_TA	≥	-0.1104	1.10	1.03%	11	-71.84%	53.34%	-1.50	-1.54
-0.4133	14	2.75	0.0030	CH_TA(-9m)	≥	-0.0623	0.83	0.78%	10	-74.69%	57.56%	-1.37	-1.48
-0.4567	15	2.61	0.0046	MOM_12	≤	0.5352	0.78	0.73%	9	-76.37%	59.53%	-1.33	-1.46
-0.5	16	2.45	0.0072	MAXP_12	≤	0.8486	0.72	0.67%	8	-74.21%	58.76%	-1.27	-1.44
-0.5	17	2.28	0.0113	CH_ARTSALES	≥	-0.2913	0.70	0.65%	7	-74.36%	61.73%	-1.14	-1.37
-0.5	18	2.10	0.0180	CH_DEP	≥	0.3359	0.70	0.65%	6	-75.81%	60.77%	-1.21	-1.42
-0.5	19	1.89	0.0296	CH_INV	≥	-0.4171	0.50	0.47%	5	-77.29%	65.09%	-1.08	-1.35
-0.5	20	1.64	0.0502	WRSTRENGTH_ALSI	≤	0.2935	0.48	0.45%	4	-74.37%	62.98%	-1.05	-1.35
-0.5	21	1.34	0.0907	EARNG_12(-6m)	≥	-0.0049	0.47	0.44%	3	-80.83%	65.41%	-1.14	-1.40
-0.5	22	0.89	0.1856	MOM_24	≤	-0.3342	0.27	0.25%	2	-90.57%	86.40%	-0.81	-1.17

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-37.26%	-2009%	647	-11.66%	-808%	832	-31.89%	-773%	291	38.87%	146%	45	5.95%	34%	69
3	-40.71%	-1971%	581	-18.68%	-1094%	703	-39.46%	-845%	257	56.74%	158%	34	5.95%	34%	69
4	-40.24%	-1841%	549	-18.45%	-1075%	699	-39.46%	-845%	257	37.76%	44%	14	22.25%	54%	29
5	-43.68%	-1558%	428	-21.06%	-1137%	648	-46.77%	-830%	213	37.76%	44%	14	22.25%	54%	29
6	-46.91%	-1145%	293	-23.11%	-1029%	534	-45.82%	-802%	210	-36.05%	-21%	7	0.00%	0%	0
7	-54.97%	-1177%	257	-34.71%	-972%	336	-7.47%	-52%	84	-36.05%	-21%	7	0.00%	0%	0
8	-67.42%	-955%	170	-35.27%	-749%	255	-7.47%	-52%	84	-36.05%	-21%	7	0.00%	0%	0
9	-65.21%	-870%	160	-35.07%	-739%	253	-7.47%	-52%	84	-36.05%	-21%	7	0.00%	0%	0
10	-67.67%	-884%	157	-30.83%	-396%	154	-117.57%	-10%	1	0.00%	0%	0	0.00%	0%	0
11	-73.88%	-807%	131	-37.10%	-226%	73	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
12	-87.39%	-750%	103	-36.46%	-161%	53	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
13	-88.82%	-725%	98	-35.67%	-137%	46	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
14	-93.27%	-630%	81	-36.10%	-117%	39	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
15	-95.84%	-557%	70	-41.04%	-130%	38	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
16	-93.10%	-473%	61	-41.29%	-120%	35	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
17	-93.08%	-403%	52	-43.94%	-117%	32	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
18	-99.45%	-340%	41	-44.55%	-115%	31	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
19	-104.46%	-270%	31	-48.24%	-117%	29	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
20	-93.78%	-203%	26	-51.43%	-94%	22	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
21	-117.16%	-156%	16	-51.77%	-86%	20	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0
22	-184.16%	-107%	7	-52.03%	-74%	17	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0

Appendix E.3.C Results for dynamic comparison level tests: restricted sample

Continued: Length = fifteen filters; Initial comparison level = 10 and 5 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.1	1	6.90	0.0000	MTB	≥	3.5800	17.30	16.17%	77	1.88%	30.21%	0.00	-0.29
0.06	2	8.28	0.0000	CH_DEP	≥	0.3359	6.75	6.31%	33	-23.03%	27.80%	-0.67	-1.22
0.02	3	8.82	0.0000	INVITA	≤	0.1952	5.82	5.44%	30	-27.73%	27.29%	-0.99	-1.41
-0.02	4	8.52	0.0000	EY	≤	0.1297	5.58	5.22%	30	-30.00%	28.26%	-1.07	-1.44
-0.06	5	8.20	0.0000	DY	≤	0.0452	4.70	4.39%	30	-35.10%	30.82%	-1.21	-1.49
-0.1	6	7.75	0.0000	INVITA(-9m)	≤	0.1674	4.45	4.16%	30	-38.67%	31.75%	-1.36	-1.56
-0.14	7	6.89	0.0000	CH_TA	≥	-0.1104	3.85	3.60%	30	-43.67%	36.36%	-1.30	-1.50
-0.18	8	5.97	0.0000	INVITA(-12m)	≤	0.1040	3.47	3.24%	30	-44.81%	37.19%	-1.29	-1.50
-0.22	9	5.49	0.0000	AGE	≤	14.0056	2.62	2.45%	30	-52.07%	49.11%	-0.99	-1.28
-0.26	10	5.17	0.0000	EPS	≤	1.1900	2.68	2.51%	30	-54.79%	51.65%	-0.97	-1.27
-0.3	11	4.88	0.0000	CH_TA(-9m)	≥	-0.0148	1.80	1.68%	26	-65.02%	49.73%	-1.46	-1.53
-0.34	12	4.65	0.0000	MAXP_12	≤	1.0428	1.75	1.64%	25	-66.03%	49.47%	-1.50	-1.56
-0.38	13	4.44	0.0000	RSTRENGTH_ALSI	≤	0.8284	1.48	1.39%	24	-70.93%	52.35%	-1.52	-1.57
-0.42	14	4.33	0.0000	CH_ARtSALES	≥	-0.2913	1.47	1.37%	23	-70.84%	53.41%	-1.44	-1.54
-0.46	15	4.21	0.0000	POS_NET(-9m)	≥	5.0000	1.40	1.31%	22	-69.89%	52.82%	-1.41	-1.54
-0.5	16	3.91	0.0001	MAXP_24	≤	0.8877	1.38	1.29%	21	-70.34%	53.88%	-1.36	-1.52
-0.5	17	3.80	0.0001	MOM_12	≤	0.5352	1.35	1.26%	20	-70.82%	53.83%	-1.36	-1.53
-0.5	18	3.68	0.0001	CH_INV	≥	-0.4171	1.15	1.07%	19	-70.93%	55.89%	-1.25	-1.47
-0.5	19	3.61	0.0002	MOM_18	≤	0.3589	0.93	0.87%	17	-74.02%	63.41%	-1.04	-1.35
-0.5	20	3.50	0.0003	POS_SALES	≤	7.0000	0.92	0.86%	16	-74.49%	63.47%	-1.04	-1.35
-0.5	21	3.39	0.0004	EARNG_12(-6m)	≥	-0.0049	0.90	0.84%	15	-73.63%	63.81%	-1.00	-1.33
-0.5	22	3.27	0.0006	WRSTRENGTH_ALSI(-9m)	≥	0.1548	0.90	0.84%	14	-74.63%	63.51%	-1.02	-1.35
-0.5	23	3.14	0.0009	EARNG_12(-12m)	≥	-0.0202	0.85	0.79%	13	-75.82%	64.19%	-1.02	-1.36
-0.5	24	3.01	0.0014	SDEV_VOL(-9m)	≤	1.0505	0.85	0.79%	12	-75.61%	64.90%	-0.98	-1.34
-0.5	25	2.80	0.0026	MOM_24	≤	0.2214	0.75	0.70%	10	-79.28%	65.44%	-1.05	-1.38
-0.5	26	2.65	0.0040	WRSTRENGTH_ALSI	≤	0.7347	0.73	0.69%	9	-79.50%	66.22%	-1.02	-1.37
-0.5	27	2.49	0.0065	POS_NET(-12m)	≥	5.0000	0.72	0.67%	8	-78.45%	66.62%	-0.97	-1.34
-0.5	28	2.11	0.0173	EARNG_24	≤	0.0423	0.50	0.47%	6	-74.99%	60.17%	-1.07	-1.43
-0.5	29	1.89	0.0296	VOL_12(-9m)	≤	1.3094	0.47	0.44%	5	-79.92%	57.90%	-1.30	-1.57
-0.5	30	1.64	0.0502	SALEStCASH	≤	10.7330	0.27	0.25%	4	-81.52%	47.81%	-1.96	-1.94
-0.5	31	1.34	0.0907	VOL_6(-9m)	≤	1.0042	0.27	0.25%	3	-80.36%	47.81%	-1.88	-1.91
-0.5	32	0.89	0.1856	MOM_6(-12m)	≥	-0.1273	0.23	0.22%	2	-84.14%	47.85%	-2.04	-1.99

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-50.71%	-1487%	352	-5.68%	-222%	470	-20.10%	-600%	358	-26.06%	-945%	435	-11.55%	-155%	161
3	-46.89%	-1176%	301	-16.30%	-469%	345	-25.83%	-723%	336	-31.74%	-1074%	406	-10.18%	-136%	160
4	-46.89%	-1176%	301	-18.18%	-514%	339	-29.48%	-759%	309	-36.08%	-1004%	334	-11.25%	-147%	157
5	-46.89%	-1176%	301	-19.44%	-539%	333	-35.18%	-715%	244	-52.17%	-1035%	238	-6.30%	-44%	84
6	-53.73%	-1007%	225	-27.26%	-604%	266	-35.19%	-713%	243	-52.17%	-1035%	238	-6.30%	-44%	84
7	-56.51%	-961%	204	-33.65%	-611%	218	-50.01%	-613%	147	-51.29%	-1004%	235	0.13%	1%	72
8	-62.28%	-893%	172	-35.22%	-628%	214	-50.01%	-613%	147	-51.29%	-1004%	235	0.13%	1%	72
9	-62.28%	-893%	172	-35.22%	-628%	214	-60.40%	-634%	126	-76.48%	-848%	133	110.89%	139%	15
10	-62.28%	-893%	172	-35.22%	-628%	214	-81.20%	-616%	91	-82.39%	-742%	108	110.89%	139%	15
11	-62.05%	-615%	119	-47.01%	-400%	102	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
12	-66.06%	-578%	105	-44.08%	-338%	92	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
13	-97.02%	-566%	70	-26.39%	-147%	67	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
14	-97.58%	-496%	61	-27.02%	-144%	64	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
15	-95.07%	-412%	52	-26.47%	-135%	61	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
16	-99.45%	-340%	41	-29.44%	-147%	60	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
17	-99.45%	-340%	41	-29.44%	-147%	60	-78.85%	-565%	86	-84.83%	-523%	74	68.77%	17%	3
18	-104.46%	-270%	31	-30.76%	-149%	58	-78.85%	-565%	86	-84.83%	-523%	74	68.77%	17%	3
19	-174.09%	-174%	12	-29.00%	-128%	53	-84.65%	-586%	83	-85.27%	-462%	65	68.77%	17%	3
20	-174.09%	-174%	12	-30.65%	-120%	47	-82.21%	-528%	77	-85.27%	-462%	65	68.77%	17%	3
21	-174.09%	-174%	12	-30.65%	-120%	47	-81.09%	-439%	65	-85.27%	-462%	65	68.77%	17%	3
22	-174.09%	-174%	12	-30.65%	-120%	47	-88.15%	-448%	61	-83.02%	-394%	57	68.77%	17%	3
23	-174.09%	-174%	12	-34.46%	-112%	39	-83.82%	-398%	57	-83.02%	-394%	57	68.77%	17%	3
24	-174.09%	-174%	12	-34.44%	-100%	35	-81.12%	-331%	49	-83.02%	-394%	57	68.77%	17%	3
25	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-330%	38	-77.59%	-284%	44	68.77%	17%	3
26	-174.09%	-174%	12	-34.44%	-100%	35	-104.30%	-322%	37	-78.57%	-216%	33	68.77%	17%	3
27	-184.16%	-107%	7	-33.51%	-78%	28	-104.30%	-322%	37	-78.57%	-216%	33	68.77%	17%	3
28	0.00%	0%	0	-4.88%	-4%	11	-104.30%	-322%	37	-78.57%	-216%	33	68.77%	17%	3
29	0.00%	0%	0	-4.88%	-4%	11	-104.30%	-322%	37	-83.02%	-76%	11	30.88%	3%	1
30	0.00%	0%	0	-4.88%	-4%	11	-104.30%	-322%	37	0.00%	0%	0	0.00%	0%	0
31	0.00%	0%	0	-4.20%	-3%	9	-105.75%	-238%	27	0.00%	0%	0	0.00%	0%	0
32	0.00%	0%	0	6.61%	2%	4	-102.29%	-170%	20	0.00%	0%	0	0.00%	0%	0

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0.05	1	4.88	0.0000	MTB	≥	3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
0.0133	2	7.59	0.0000	CH_DEP	≥	0.3359	6.73	6.29%	33	-23.03%	27.80%	-0.67	-1.22
-0.0233	3	8.30	0.0000	INVITA(-12m)	≤	0.1681	5.87	5.48%	32	-29.39%	28.89%	-1.00	-1.39
-0.06	4	8.15	0.0000	DY	≤	0.0452	5.08	4.75%	32	-34.62%	30.54%	-1.22	-1.49
-0.0967	5	7.82	0.0000	EY	≤	0.1297	4.77	4.45%	32	-37.48%	32.23%	-1.26	-1.50
-0.1333	6	7.07	0.0000	POS_OP	≤	15.0000	3.85	3.60%	32	-44.74%	38.61%	-1.23	-1.44
-0.17	7	6.27	0.0000	CH_TA	≥	-0.1104	3.60	3.36%	32	-46.63%	39.59%	-1.25	-1.45
-0.2067	8	5.81	0.0000	AGE	≤	14.0056	2.75	2.57%	32	-54.53%	52.72%	-0.95	-1.24
-0.2433	9	5.44	0.0000	CH_ARtSALES	≥	-0.2913	2.73	2.55%	31	-54.17%	52.88%	-0.92	-1.23
-0.28	10	5.04	0.0000	CH_TA(-9m)	≥	-0.0148	2.42	2.26%	27	-63.26%	51.44%	-1.31	-1.44
-0.3167	11	4.82	0.0000	POS_SALES	≤	9.0000	2.17	2.02%	26	-62.80%	51.21%	-1.28	-1.44
-0.3533	12	4.66	0.0000	MAXP_12	≤	1.0428	2.13	1.99%	25	-63.50%	50.58%	-1.32	-1.47
-0.39	13	4.47	0.0000	RSTRENGTH_ALSI	≤	0.8284	1.87	1.74%	24	-67.60%	53.39%	-1.33	-1.48
-0.4267	14	4.33	0.0000	INVITA	≤	0.0375	1.48	1.39%	23	-70.84%	53.41%	-1.44	-1.54
-0.4633	15	4.21	0.0000	POS_NET(-9m)	≥	5.0000	1.40	1.31%	22	-69.89%	52.82%	-1.41	-1.54
-0.5	16	3.91	0.0001	MAXP_24	≤	0.8877	1.38	1.29%	21	-70.34%	53.88%	-1.36	-1.52
-0.5	17	3.80	0.0001	MOM_12	≤	0.5352	1.38	1.29%	20	-70.82%	53.83%	-1.36	-1.53
-0.5	18	3.68	0.0001	CH_INV	≥	-0.4171	1.18	1.11%	19	-70.93%	55.89%	-1.25	-1.47
-0.5	19	3.61	0.0002	MOM_18	≤	0.3589	0.95	0.89%	17	-74.02%	63.41%	-1.04	-1.35
-0.5	20	3.50	0.0003	EARNG_12(-6m)	≥	-0.0049	0.93	0.87%	16	-73.18%	63.74%	-1.00	-1.33
-0.5	21	3.39	0.0004	WRSTRENGTH_ALSI(-9m)	≥	0.1548	0.93	0.87%	15	-74.09%	63.45%	-1.02	-1.34
-0.5	22	3.27	0.0006	EARNG_12(-12m)	≥	-0.0202	0.90	0.84%	14	-75.16%	63.99%	-1.02	-1.35
-0.5	23	3.14	0.0009	SDEV_VOL(-9m)	≤	1.1883	0.87	0.81%	13	-74.93%	64.25%	-0.99	-1.34
-0.5	24	2.94	0.0017	MOM_24	≤	0.2214	0.78	0.73%	11	-78.18%	64.86%	-1.05	-1.37
-0.5	25	2.80	0.0026	WRSTRENGTH_ALSI	≤	0.7347	0.75	0.70%	10	-78.28%	65.63%	-1.01	-1.36
-0.5	26	2.65	0.0040	POS_NET(-12m)	≥	5.0000	0.73	0.69%	9	-77.21%	66.01%	-0.96	-1.33
-0.5	27	2.31	0.0105	EARNG_24	≤	0.0423	0.52	0.48%	7	-73.87%	59.28%	-1.08	-1.43
-0.5	28	2.11	0.0173	MOM_6(-12m)	≥	-0.1273	0.52	0.48%	6	-74.02%	59.28%	-1.07	-1.44
-0.5	29	1.64	0.0502	SALEStCASH	≤	10.7330	0.28	0.26%	4	-79.82%	48.90%	-1.97	-1.94
-0.5	30	1.34	0.0907	VOL_12(-9m)	≤	1.3094	0.23	0.22%	3	-84.42%	47.85%	-2.10	-2.00
-0.5	31	0.89	0.1856	VOL_6(-9m)	≤	0.3100	0.23	0.22%	2	-84.14%	47.85%	-2.06	-1.99

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-50.71%	-1487%	352	-5.68%	-222%	470	-20.10%	-600%	358	-26.06%	-945%	435	-11.55%	-155%	161
3	-50.80%	-1287%	304	-19.01%	-486%	307	-25.81%	-721%	335	-31.74%	-1074%	406	-10.18%	-136%	160
4	-50.80%	-1287%	304	-20.42%	-512%	301	-31.89%	-688%	259	-43.28%	-1115%	309	-4.51%	-33%	87
5	-50.80%	-1287%	304	-22.67%	-557%	295	-35.19%	-713%	243	-52.17%	-1035%	238	-6.30%	-44%	84
6	-57.56%	-1242%	259	-29.46%	-577%	235	-63.67%	-594%	112	-51.33%	-898%	210	0.13%	1%	72
7	-62.76%	-1119%	214	-33.08%	-607%	220	-63.67%	-594%	112	-51.33%	-898%	210	0.13%	1%	72
8	-62.76%	-1119%	214	-33.08%	-607%	220	-81.20%	-616%	91	-82.39%	-742%	108	110.89%	139%	15
9	-61.42%	-1049%	205	-33.36%	-603%	217	-81.20%	-616%	91	-82.39%	-742%	108	110.89%	139%	15
10	-60.94%	-772%	152	-42.82%	-375%	105	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
11	-60.61%	-748%	148	-39.55%	-320%	97	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
12	-61.84%	-660%	128	-39.34%	-305%	93	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
13	-83.66%	-648%	93	-20.17%	-114%	68	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
14	-97.58%	-496%	61	-27.02%	-144%	64	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
15	-95.07%	-412%	52	-26.47%	-135%	61	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
16	-99.45%	-340%	41	-29.44%	-147%	60	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
17	-99.45%	-340%	41	-29.44%	-147%	60	-78.85%	-565%	86	-84.83%	-523%	74	68.77%	17%	3
18	-104.46%	-270%	31	-30.76%	-149%	58	-78.85%	-565%	86	-84.83%	-523%	74	68.77%	17%	3
19	-174.09%	-174%	12	-29.00%	-128%	53	-84.65%	-586%	83	-85.27%	-462%	65	68.77%	17%	3
20	-174.09%	-174%	12	-29.00%	-128%	53	-84.04%	-497%	71	-85.27%	-462%	65	68.77%	17%	3
21	-174.09%	-174%	12	-29.00%	-128%	53	-90.64%	-506%	67	-83.02%	-394%	57	68.77%	17%	3
22	-174.09%	-174%	12	-32.01%	-120%	45	-86.88%	-456%	63	-83.02%	-394%	57	68.77%	17%	3
23	-174.09%	-174%	12	-31.76%	-109%	41	-84.92%	-389%	55	-83.02%	-394%	57	68.77%	17%	3
24	-174.09%	-174%	12	-31.76%	-109%	41	-105.89%	-388%	44	-77.59%	-284%	44	68.77%	17%	3
25	-174.09%	-174%	12	-31.76%	-109%	41	-105.93%	-380%	43	-78.57%	-216%	33	68.77%	17%	3
26	-184.16%	-107%	7	-30.43%	-86%	34	-105.93%	-380%	43	-78.57%	-216%	33	68.77%	17%	3
27	0.00%	0%	0	-8.83%	-13%	17	-105.93%	-380%	43	-78.57%	-216%	33	68.77%	17%	3
28	0.00%	0%	0	-7.16%	-7%	12	-104.04%	-312%	36	-78.57%	-216%	33	68.77%	17%	3
29	0.00%	0%	0	-7.16%	-7%	12	-104.04%	-312%	36	0.00%	0%	0	0.00%	0%	0
30	0.00%	0%	0	1.76%	1%	6	-101.66%	-254%	30	0.00%	0%	0	0.00%	0%	0
31	0.00%	0%	0	6.61%	2%	4	-102.29%	-170%	20	0.00%	0%	0	0.00%	0%	0

Appendix E.3.C Results for dynamic comparison level tests: restricted sample

Continued: Length = fifteen filters; Initial comparison level = 0 and −5 percent

CL	No	Z-stat	P-value	Variable		Filter Level	Average Number of Stocks	Stocks as a proportion of sample	Number of winners	Average Return	Standard Deviation	JK Statistic	Sharpe Ratio
0	1	2.59	0.0048	MTB	≥	3.5800	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
-0.0333	2	6.74	0.0000	CH_DEP	≥	0.5059	5.93	5.55%	33	-25.99%	27.76%	-0.86	-1.33
-0.0667	3	8.10	0.0000	INVITA(-12m)	≤	0.1681	5.07	4.74%	32	-34.16%	29.38%	-1.30	-1.54
-0.1	4	7.66	0.0000	EY	≤	0.1465	5.03	4.70%	32	-35.25%	29.94%	-1.31	-1.54
-0.1333	5	6.87	0.0000	POS_OP	≤	15.0000	3.63	3.40%	32	-44.52%	38.37%	-1.25	-1.44
-0.1667	6	6.25	0.0000	DY	≤	0.0253	3.05	2.85%	32	-49.74%	49.23%	-0.94	-1.23
-0.2	7	5.79	0.0000	CH_TA	≥	-0.1104	2.80	2.62%	32	-52.46%	50.11%	-0.99	-1.27
-0.2333	8	5.52	0.0000	AGE	≤	14.0056	2.55	2.38%	32	-54.87%	52.79%	-0.96	-1.24
-0.2667	9	5.20	0.0000	CH_ARtSALES	≥	-0.2913	2.53	2.37%	31	-54.51%	52.95%	-0.93	-1.23
-0.3	10	5.02	0.0000	CH_TA(-9m)	≥	-0.0148	2.42	2.26%	27	-63.26%	51.44%	-1.31	-1.44
-0.3333	11	4.76	0.0000	POS_SALES	≤	9.0000	2.17	2.02%	26	-62.80%	51.21%	-1.28	-1.44
-0.3667	12	4.61	0.0000	MAXP_12	≤	1.0428	2.13	1.99%	25	-63.50%	50.58%	-1.32	-1.47
-0.4	13	4.45	0.0000	RSTRENGTH_ALSI	≤	0.8284	1.87	1.74%	24	-67.80%	53.39%	-1.33	-1.48
-0.4333	14	4.33	0.0000	INVITA	≤	0.0375	1.47	1.37%	23	-70.84%	53.41%	-1.44	-1.54
-0.4667	15	4.19	0.0000	POS_NET(-9m)	≥	5.0000	1.40	1.31%	22	-69.89%	52.82%	-1.41	-1.54
-0.5	16	3.91	0.0001	MAXP_24	≤	0.8877	1.38	1.29%	21	-70.34%	53.88%	-1.36	-1.52
-0.5	17	3.80	0.0001	MOM_12	≤	0.5352	1.38	1.29%	20	-70.82%	53.83%	-1.36	-1.53
-0.5	18	3.68	0.0001	CH_INV	≥	-0.4171	1.18	1.11%	19	-70.93%	55.89%	-1.25	-1.47
-0.5	19	3.61	0.0002	MOM_18	≤	0.3589	0.95	0.89%	17	-74.02%	63.41%	-1.04	-1.35
-0.5	20	3.50	0.0003	EARNG_12(-6m)	≥	-0.0049	0.93	0.87%	16	-73.18%	63.74%	-1.00	-1.33
-0.5	21	3.39	0.0004	WRSTRENGTH_ALSI(-9m)	≥	0.1548	0.93	0.87%	15	-74.09%	63.45%	-1.02	-1.34
-0.5	22	3.27	0.0006	EARNG_12(-12m)	≥	-0.0202	0.90	0.84%	14	-75.16%	63.99%	-1.02	-1.35
-0.5	23	3.14	0.0009	SDEV_VOL(-9m)	≤	1.1883	0.87	0.81%	13	-74.93%	64.25%	-0.99	-1.34
-0.5	24	2.94	0.0017	MOM_24	≤	0.2214	0.78	0.73%	11	-78.18%	64.86%	-1.05	-1.37
-0.5	25	2.80	0.0026	WRSTRENGTH_ALSI	≤	0.7347	0.75	0.70%	10	-78.28%	65.63%	-1.01	-1.36
-0.5	26	2.65	0.0040	POS_NET(-12m)	≥	5.0000	0.73	0.69%	9	-77.21%	66.01%	-0.96	-1.33
-0.5	27	2.31	0.0105	EARNG_24	≤	0.0423	0.52	0.48%	7	-73.87%	59.28%	-1.08	-1.43
-0.5	28	2.11	0.0173	MOM_6(-12m)	≥	-0.1273	0.52	0.48%	6	-74.02%	59.28%	-1.07	-1.44
-0.5	29	1.64	0.0502	SALESICASH	≤	10.7330	0.28	0.26%	4	-79.82%	46.90%	-1.97	-1.94
-0.5	30	1.34	0.0907	VOL_12(-9m)	≤	1.3094	0.23	0.22%	3	-84.42%	47.85%	-2.10	-2.00
-0.5	31	0.89	0.1856	VOL_6(-9m)	≤	0.3100	0.23	0.22%	2	-84.14%	47.85%	-2.06	-1.99

No	2000			2001			2002			2003			2004		
1	-15.28%	-1328%	1043	-9.41%	-1349%	1720	24.17%	2689%	1335	-6.30%	-703%	1340	22.75%	1680%	886
2	-50.59%	-1459%	346	-6.81%	-260%	458	-23.73%	-583%	295	-34.99%	-1003%	344	-2.80%	-22%	93
3	-50.67%	-1258%	298	-21.30%	-524%	295	-31.07%	-704%	272	-43.14%	-1132%	315	-0.32%	-2%	92
4	-50.67%	-1258%	298	-21.30%	-524%	295	-31.90%	-715%	269	-47.17%	-1120%	285	-1.88%	-14%	89
5	-57.56%	-1213%	253	-29.83%	-569%	229	-63.67%	-594%	112	-52.90%	-904%	205	4.83%	31%	77
6	-57.56%	-1213%	253	-29.83%	-569%	229	-68.19%	-619%	109	-71.32%	-820%	138	110.89%	139%	15
7	-62.91%	-1090%	208	-33.58%	-599%	214	-68.19%	-619%	109	-71.32%	-820%	138	110.89%	139%	15
8	-62.91%	-1090%	208	-33.58%	-599%	214	-81.20%	-616%	91	-82.39%	-742%	108	110.89%	139%	15
9	-61.54%	-1020%	199	-33.87%	-596%	211	-81.20%	-616%	91	-82.39%	-742%	108	110.89%	139%	15
10	-60.94%	-772%	152	-42.82%	-375%	105	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
11	-60.61%	-748%	148	-39.55%	-320%	97	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
12	-61.84%	-660%	128	-39.34%	-305%	93	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
13	-83.56%	-648%	93	-20.17%	-114%	68	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
14	-97.58%	-496%	61	-27.02%	-144%	64	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
15	-95.07%	-412%	52	-26.47%	-135%	61	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
16	-99.45%	-340%	41	-29.44%	-147%	60	-77.11%	-565%	88	-83.23%	-583%	84	68.77%	17%	3
17	-99.45%	-340%	41	-29.44%	-147%	60	-78.86%	-565%	86	-84.83%	-523%	74	68.77%	17%	3
18	-104.46%	-270%	31	-30.76%	-149%	58	-78.86%	-565%	86	-84.83%	-523%	74	68.77%	17%	3
19	-174.09%	-174%	12	-29.00%	-128%	53	-84.66%	-586%	83	-85.27%	-462%	65	68.77%	17%	3
20	-174.09%	-174%	12	-29.00%	-128%	53	-84.04%	-497%	71	-85.27%	-462%	65	68.77%	17%	3
21	-174.09%	-174%	12	-29.00%	-128%	53	-90.64%	-506%	67	-83.02%	-394%	57	68.77%	17%	3
22	-174.09%	-174%	12	-32.01%	-120%	45	-86.88%	-456%	63	-83.02%	-394%	57	68.77%	17%	3
23	-174.09%	-174%	12	-31.76%	-109%	41	-84.92%	-389%	55	-83.02%	-394%	57	68.77%	17%	3
24	-174.09%	-174%	12	-31.76%	-109%	41	-105.89%	-388%	44	-77.59%	-284%	44	68.77%	17%	3
25	-174.09%	-174%	12	-31.76%	-109%	41	-105.93%	-380%	43	-78.57%	-216%	33	68.77%	17%	3
26	-184.16%	-107%	7	-30.43%	-86%	34	-105.93%	-380%	43	-78.57%	-216%	33	68.77%	17%	3
27	0.00%	0%	0	-8.83%	-13%	17	-105.93%	-380%	43	-78.57%	-216%	33	68.77%	17%	3
28	0.00%	0%	0	-7.16%	-7%	12	-104.04%	-312%	36	-78.57%	-216%	33	68.77%	17%	3
29	0.00%	0%	0	-7.16%	-7%	12	-104.04%	-312%	36	0.00%	0%	0	0.00%	0%	0
30	0.00%	0%	0	1.76%	1%	6	-101.66%	-254%	30	0.00%	0%	0	0.00%	0%	0
31	0.00%	0%	0	6.61%	2%	4	-102.29%	-170%	20	0.00%	0%	0	0.00%	0%	0

-0.05	1	0.20	0.4213	SALESICASH(-12m)	≤	0.4647	2.97	2.77%	9	8.01%	31.74%	0.06	-0.09
-0.08	2	5.00	0.0000	CH_TA(-9m)	≥	0.3650	1.52	1.42%	9	-31.97%	35.72%	-0.78	-1.19
-0.11	3	5.36	0.0000	CH_TA	≥	-0.1104	1.37	1.28%	9	-40.95%	35.68%	-1.26	-1.45
-0.14	4	5.15	0.0000	MAXP_24	≤	0.9431	1.35	1.26%	9	-41.34%	36.41%	-1.21	-1.43
-0.17	5	4.93	0.0000	MAXP_12	≤	0.9457	1.33	1.25%	8	-41.06%	36.17%	-1.20	-1.43
-0.2	6	4.76	0.0000	CH_TA(-12m)	≥	0.0866	1.08	1.01%	6	-43.15%	43.07%	-0.92	-1.25
-0.23	7	4.46	0.0000	CH_DEP	≥	-0.1744	0.87	0.81%	6	-43.45%	38.78%	-1.13	-1.39
-0.26	8	4.21	0.0000	DY	≤	0.0303	0.77	0.72%	6	-45.83%	37.29%	-1.34	-1.51
-0.29	9	3.96	0.0001	WRSTRENGTH_ALSI(-9m)	≥	0.2764	0.73	0.69%	5	-47.09%	37.39%	-1.39	-1.54
-0.32	10	3.61	0.0002	EPS	≤	0.0500	0.58	0.55%	2	-43.61%	36.91%	-1.20	-1.46
-0.35	11	3.26	0.0006	MTB	≥	0.6200	0.52	0.48%	2	-45.55%	37.55%	-1.25	-1.49
-0.38	12	2.89	0.0020	SDEV_VOL(-9m)	≤	0.6368	0.45	0.42%	2	-45.89%	37.45%	-1.26	-1.50
-0.41	13	2.49	0.0065	AGE	≤	11.3944	0.38	0.36%	2	-46.43%	39.30%	-1.15	-1.45
-0.44	14	1.64	0.0502	EY	≤	0.1465	0.30	0.28%	1	-47.05%	44.23%	-0.92	-1.30

No															
1	21.71%	516%	285	-17.66%	-852%	579	42.19%	1519%	432	-24.17%	-326%	162	25.92%	168%	78
2	-67.51%	-743%	132	-33.16%	-580%	210	-14.44%	-108%	90	-35.24%	-264%	90	23.51%	129%	66
3	-67.51%	-743%	132	-33.16%	-580%	210	-14.44%	-108%	90	-62.85%	-236%	45	115.88%	29%	3
4	-72.22%	-668%	111	-34.08%	-588%	207	-14.44%	-108%	90	-62.85%	-236%	45	115.88%	29%	3
5	-72.22%	-668%	111	-34.08%	-588%	207	-15.14%	-105%	83	-66.30%	-188%	40	115.88%	29%	3
6	-70.12%	-526%	90	-35.41%	-602%	204	-15.14%	-105%	83	-253.98%	-148%	7	0.00%	0%	0
7	-70.12%	-526%	90	-35.41%	-602%	204	-31.93%	-176%	66	0.00%	0%	0	0.00%	0%	0
8	-67.10%	-386%	69	-42.24%	-539%	153	-31.93%	-176%	66	0.00%	0%	0	0.00%	0%	0
9	-67.26%	-359%	64	-41.29%	-492%	143	-36.84%	-138%	45	0.00%	0%	0	0.00%	0%	0
10	-48.95%	-163%	40	-44.30%	-484%	131	-36.84%	-138%	45	0.00%	0%	0	0.00%	0%	0
11	-55.55%	-181%	39	-44.37%	-381%	103	-35.23%	-76%	26	0.00%	0%	0	0.00%	0%	0
12	-57.88%	-145%	30	-42.49%	-319%	90	-41.46%	-41%	12	0.00%	0%	0	0.00%	0%	0
13	-57.88%	-145%	30	-42.23%	-264%	75	-36.87%	-9%	3	0.00%	0%	0	0.00%	0%	0
14	-63.41%	-111%	21	-34.33%	-77%	27	0.00%	0%	0	0.00%	0%	0	0.00%	0%	0

Appendix E.4. Loser filter combinations satisfying sample size requirement

The table below lists every filter combinations from all stepwise median comparison procedures in Chapter 7 which form portfolios with an average of at least ten companies per month over the period from January 2000 until December 2004. In order to identify exactly which filter combination each line refers to, the table indicates whether the combination is derived with a static comparison level (Appendix E.2.) or a dynamic comparison level (Appendix E.3.). If a dynamic comparison level is used, the length or number of filters over which the comparison level is reduced to −50 percent is shown: either 5 (Appendix E.3.A), 10 (Appendix E.3.B) or 15 (Appendix E.3.C). The table then shows the initial comparison level under which each combination is derived as well as the number of filters included in the combination.

The table contains a number of metrics to evaluate the performance of each filter. Firstly, the average number of companies held per month are shown. Secondly, the number of companies as a proportion of the total sample is shown. Finally, the average return and standard deviation of the resulting filtered portfolio is shown.

Two evaluation metrics are displayed for each filter combination: the JK statistic and the Sharpe ratio.

Finally, the calendar time payoffs or equally weighted average return of each filtered portfolio over the years from 2000 until 2004 are shown.

The highlighted cells indicate that filter combination which minimizes both the Sharpe ratio and the JK statistic.

Test Type	Length	Initial CL	No	Average Number of Stocks	Stocks as a proportion of sample	Number of losers	Average Return	Portfolio Standard Deviation	JK statistic	Sharpe Ratio
Static		0.2	1	28.97	27.07%	106	8.98%	23.73%	0.15	-0.07
Static		0.2	2	24.63	23.02%	92	2.85%	23.92%	0.01	-0.33
Static		0.2	3	23.77	22.21%	87	1.40%	24.02%	0.00	-0.39
Static		0.2	4	18.22	17.02%	83	-6.51%	24.55%	-0.07	-0.70
Static		0.2	5	16.92	15.81%	83	-10.74%	25.98%	-0.16	-0.83
Static		0.2	6	12.27	11.46%	64	-20.85%	26.30%	-0.59	-1.20
Static		0.2	7	11.37	10.62%	55	-21.40%	25.82%	-0.63	-1.24
Static		0.2	8	10.90	10.19%	54	-22.93%	28.09%	-0.60	-1.20
Static		0.2	9	10.35	9.67%	52	-22.42%	28.27%	-0.56	-1.17
Static		0.15	1	17.62	16.46%	77	1.88%	30.21%	0.00	-0.29
Static		0.15	2	11.47	10.72%	49	-10.80%	24.29%	-0.20	-0.89
Static		0.1	1	17.62	16.46%	77	1.88%	30.21%	0.00	-0.29
Static		0.05	1	17.62	16.46%	77	1.88%	30.21%	0.00	-0.29
Static		0	1	17.62	16.46%	77	1.88%	30.21%	0.00	-0.29
Dynamic	15	0.2	1	28.42	26.56%	106	8.98%	23.73%	0.15	-0.07
Dynamic	15	0.2	2	24.25	22.66%	92	2.85%	23.92%	0.01	-0.33
Dynamic	15	0.2	3	21.32	19.92%	83	-0.75%	24.69%	0.00	-0.46
Dynamic	15	0.2	4	13.47	12.59%	48	-11.95%	25.29%	-0.21	-0.90
Dynamic	15	0.2	5	10.37	9.69%	48	-22.50%	25.52%	-0.73	-1.30
Dynamic	15	0.15	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
Dynamic	15	0.1	1	17.30	16.17%	77	1.88%	30.21%	0.00	-0.29
Dynamic	15	0.05	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
Dynamic	15	0	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
Dynamic	10	0.2	1	28.42	26.56%	106	8.98%	23.73%	0.15	-0.07
Dynamic	10	0.2	2	24.25	22.66%	92	2.85%	23.92%	0.01	-0.33
Dynamic	10	0.15	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
Dynamic	10	0.1	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
Dynamic	10	0.05	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
Dynamic	10	0	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
Dynamic	5	0.2	1	28.42	26.56%	106	8.98%	23.73%	0.15	-0.07
Dynamic	5	0.15	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
Dynamic	5	0.1	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
Dynamic	5	0.05	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29
Dynamic	5	0	1	17.28	16.15%	77	1.88%	30.21%	0.00	-0.29

No	2000	2001	2002	2003	2004
1	-10.56%	-1.77%	25.17%	11.91%	24.04%
2	-14.52%	-4.25%	20.66%	8.24%	11.40%
3	-13.69%	-5.03%	21.81%	0.34%	14.08%
4	-21.95%	-11.75%	7.03%	-6.55%	30.90%
5	-22.20%	-14.99%	5.28%	-15.54%	26.41%
6	-20.88%	-25.39%	-13.92%	-19.12%	-15.43%
7	-21.97%	-23.77%	-19.66%	-17.56%	-15.43%
8	-22.58%	-24.63%	-23.34%	-16.67%	-27.29%
9	-20.63%	-25.07%	-22.84%	-16.26%	-27.29%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
2	-24.01%	-0.41%	-11.35%	-25.01%	8.50%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-10.56%	-1.77%	25.17%	11.91%	24.04%
2	-14.52%	-4.25%	20.66%	8.24%	11.40%
3	-13.96%	-8.87%	28.78%	-7.17%	14.79%
4	-14.29%	-20.91%	19.65%	-15.90%	-27.33%
5	-24.82%	-26.89%	-4.01%	-35.60%	-12.67%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-10.56%	-1.77%	25.17%	11.91%	24.04%
2	-14.52%	-4.25%	20.66%	8.24%	11.40%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-10.56%	-1.77%	25.17%	11.91%	24.04%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%
1	-15.28%	-9.41%	24.17%	-6.30%	22.75%

Appendix E.5. Companies selected by final loser filter

The table below lists all companies selected by the final loser filter combination in Chapter 7. Along with the names of the companies, the buy dates and resulting 12 month return is shown. The table is ranked by date.

Year	Month	Company	12-month Return
1996	Apr	HARMONY GOLD MNG.	-39.18%
1996	May	HARMONY GOLD MNG.	-39.89%
1996	Sep	DIMENSION DATA HDG.(JSE)	116.19%
1997	Mar	DIMENSION DATA HDG.(JSE)	123.75%
1997	Apr	DIMENSION DATA HDG.(JSE)	135.40%
1997	May	DIMENSION DATA HDG.(JSE)	132.15%
1997	Sep	BIDVEST GROUP	-5.13%
1997	Sep	DIMENSION DATA HDG.(JSE)	23.30%
1997	Dec	BIDVEST GROUP	7.07%
1998	Apr	INVESTEC	-2.08%
1998	May	BIDVEST GROUP	-11.38%
1998	May	BUSINESS CONNEXION GROUP	-27.14%
1998	May	DIMENSION DATA HDG.(JSE)	-27.47%
1998	May	INVESTEC	-8.94%
1998	Jun	BIDVEST GROUP	14.56%
1998	Jun	BUSINESS CONNEXION GROUP	-27.57%
1998	Jun	DATATEC	-20.63%
1998	Jun	DIMENSION DATA HDG.(JSE)	-15.96%
1998	Jun	FIRSTRAND	-22.78%
1998	Jun	INVESTEC	12.27%
1998	Jul	BIDVEST GROUP	2.32%
1998	Jul	CERAMIC INDUSTRIES	-9.22%
1998	Jul	FIRSTRAND	-29.97%
1998	Jul	HOSKEN CONS.INV.	-32.60%
1998	Jul	INVESTEC	-0.39%
1998	Aug	BIDVEST GROUP	22.85%
1998	Aug	BUSINESS CONNEXION GROUP	-13.81%
1998	Aug	DATATEC	1.48%
1998	Aug	DIMENSION DATA HDG.(JSE)	5.94%
1998	Aug	FIRSTRAND	8.34%
1998	Aug	FRONTRANGE SLTN.	-0.89%
1998	Sep	AFRICAN BANK INVS.	-44.22%
1998	Sep	BIDVEST GROUP	15.08%
1998	Sep	BUSINESS CONNEXION GROUP	-15.22%
1998	Sep	BYTES TECH.GP.	-53.95%
1998	Sep	DATATEC	-7.72%
1998	Sep	DIMENSION DATA HDG.(JSE)	0.49%
1998	Sep	FIRSTRAND	20.40%
1998	Sep	FRONTRANGE SLTN.	-3.47%
1998	Oct	AFRICAN BANK INVS.	-53.66%
1998	Oct	BIDVEST GROUP	12.47%
1998	Oct	BUSINESS CONNEXION GROUP	-27.14%
1998	Oct	BYTES TECH.GP.	-76.38%
1998	Oct	DATATEC	-10.13%
1998	Oct	FIRSTRAND	0.14%
1998	Oct	FRONTRANGE SLTN.	16.46%
1998	Oct	INVESTEC	8.99%
1998	Nov	AFRICAN BANK INVS.	-33.15%
1998	Nov	BARNARD JAC.MELLET	66.59%
1998	Nov	BIDVEST GROUP	24.07%
1998	Nov	BUSINESS CONNEXION GROUP	-27.23%
1998	Nov	BYTES TECH.GP.	-76.11%
1998	Nov	DATATEC	33.83%
1998	Nov	FIRSTRAND	9.58%
1998	Nov	FRONTRANGE SLTN.	32.00%
1998	Nov	INVESTEC	21.25%
1998	Dec	ADVTECH	-61.91%
1998	Dec	AFRICAN BANK INVS.	-36.50%
1998	Dec	BARNARD JAC.MELLET	82.12%
1998	Dec	BIDVEST GROUP	43.75%
1998	Dec	BUSINESS CONNEXION GROUP	-8.73%
1998	Dec	BYTES TECH.GP.	-77.37%
1998	Dec	DATATEC	42.96%
1998	Dec	FIRSTRAND	40.35%
1998	Dec	FRONTRANGE SLTN.	108.84%
1999	Jan	ADCORP	19.55%
1999	Jan	ADVTECH	-71.68%
1999	Jan	AFRICAN BANK INVS.	-26.32%
1999	Jan	BIDVEST GROUP	17.93%
1999	Jan	BUSINESS CONNEXION GROUP	-23.13%
1999	Jan	BYTES TECH.GP.	-73.83%
1999	Jan	DATATEC	20.07%
1999	Jan	FIRSTRAND	20.26%
1999	Jan	FRONTRANGE SLTN.	39.40%
1999	Jan	INVESTEC	21.96%
1999	Feb	ADCORP	5.76%
1999	Feb	ADVTECH	-75.49%
1999	Feb	AFRICAN BANK INVS.	-27.20%
1999	Feb	BIDVEST GROUP	11.24%
1999	Feb	BRIMSTONE INV.'N'	-70.32%
1999	Feb	BUSINESS CONNEXION GROUP	-7.65%
1999	Feb	BYTES TECH.GP.	-75.89%
1999	Feb	DATATEC	52.47%
1999	Feb	FIRSTRAND	23.97%
1999	Feb	FRONTRANGE SLTN.	62.69%
1999	Feb	INVESTEC	14.56%
1999	Mar	ADCORP	-11.93%
1999	Mar	ADVTECH	-79.33%
1999	Mar	AFRICAN BANK INVS.	-34.05%
1999	Mar	ALLIED TECHNOLOGIES	-3.30%
1999	Mar	BIDVEST GROUP	1.24%
1999	Mar	BRIMSTONE INV.'N'	-69.34%
1999	Mar	BUSINESS CONNEXION GROUP	-29.96%
1999	Mar	BYTES TECH.GP.	-84.30%
1999	Mar	DATATEC	21.34%
1999	Mar	FIRSTRAND	37.07%
1999	Mar	FRONTRANGE SLTN.	36.96%
1999	Mar	INVESTEC	17.05%
1999	Apr	ADVTECH	-83.38%
1999	Apr	AFRICAN BANK INVS.	-30.24%
1999	Apr	ALLIED TECHNOLOGIES	-6.77%
1999	Apr	BIDVEST GROUP	2.87%
1999	Apr	BRIMSTONE INV.'N'	-72.45%
1999	Apr	BUSINESS CONNEXION GROUP	-33.75%
1999	Apr	BYTES TECH.GP.	-86.29%
1999	Apr	DATATEC	-50.00%
1999	Apr	FIRSTRAND	22.23%

Year	Month	Company	12-month Return
1999	Apr	FRONTRANGE SLTN.	-28.36%
1999	Apr	INVESTEC	9.94%
1999	May	ADCORP	-26.92%
1999	May	AFRICAN BANK INVS.	-25.93%
1999	May	ALLIED TECHNOLOGIES	-5.37%
1999	May	BIDVEST GROUP	2.71%
1999	May	BUSINESS CONNEXION GROUP	-25.76%
1999	May	BYTES TECH.GP.	-88.03%
1999	May	DATACENTRIX	-54.59%
1999	May	DATATEC	-47.37%
1999	May	FIRSTRAND	27.00%
1999	May	FRONTRANGE SLTN.	-19.64%
1999	May	INVESTEC	6.25%
1999	Jun	ADCORP	-33.15%
1999	Jun	AFRICAN BANK INVS.	-59.28%
1999	Jun	ALLIED TECHNOLOGIES	-1.00%
1999	Jun	ASPEN PHMCR.	12.74%
1999	Jun	BUSINESS CONNEXION GROUP	-9.07%
1999	Jun	BYTES TECH.GP.	-84.17%
1999	Jun	DATACENTRIX	-52.38%
1999	Jun	DATATEC	-48.33%
1999	Jun	FIRSTRAND	3.70%
1999	Jun	FRONTRANGE SLTN.	-18.14%
1999	Jun	GIJIMA AST GROUP	-5.70%
1999	Jul	ADCORP	-34.25%
1999	Jul	AFRICAN BANK INVS.	-57.55%
1999	Jul	ASPEN PHMCR.	27.58%
1999	Jul	BARPLATS INVS.	32.99%
1999	Jul	BUSINESS CONNEXION GROUP	-9.64%
1999	Jul	BYTES TECH.GP.	-85.85%
1999	Jul	DATACENTRIX	-45.00%
1999	Jul	DATATEC	-29.12%
1999	Jul	FIRSTRAND	7.74%
1999	Jul	FRONTRANGE SLTN.	-5.36%
1999	Jul	GIJIMA AST GROUP	18.18%
1999	Jul	INVESTEC	-1.36%
1999	Aug	ADCORP	-28.85%
1999	Aug	AFLEASE GD.& UR.RES.	12.12%
1999	Aug	AFRICAN BANK INVS.	-41.11%
1999	Aug	ALLIED TECHNOLOGIES	42.83%
1999	Aug	ASPEN PHMCR.	27.27%
1999	Aug	BARNARD JAC.MELLET	-57.76%
1999	Aug	BUSINESS CONNEXION GROUP	-17.75%
1999	Aug	BYTES TECH.GP.	-87.32%
1999	Aug	DATACENTRIX	-36.28%
1999	Aug	DATATEC	-16.27%
1999	Aug	ENTER.OUTSC.	-27.85%
1999	Aug	FRONTRANGE SLTN.	-35.32%
1999	Aug	GIJIMA AST GROUP	35.85%
1999	Aug	INVESTEC	21.84%
1999	Sep	ADCORP	-16.89%
1999	Sep	AFRICAN BANK INVS.	-32.84%
1999	Sep	ASPEN PHMCR.	48.42%
1999	Sep	BARNARD JAC.MELLET	-52.55%
1999	Sep	BUSINESS CONNEXION GROUP	-26.82%
1999	Sep	DATACENTRIX	-50.00%
1999	Sep	DATATEC	-0.54%
1999	Sep	ENTER.OUTSC.	-26.10%
1999	Sep	FRONTRANGE SLTN.	-32.01%
1999	Sep	GIJIMA AST GROUP	87.49%
1999	Sep	INVESTEC	21.48%
1999	Oct	ADCORP	-20.54%
1999	Oct	ASPEN PHMCR.	43.58%
1999	Oct	BARNARD JAC.MELLET	-85.33%
1999	Oct	BARPLATS INVS.	120.95%
1999	Oct	BUSINESS CONNEXION GROUP	-30.72%
1999	Oct	DATACENTRIX	-53.50%
1999	Oct	DATATEC	-37.62%
1999	Oct	ENTER.OUTSC.	-30.38%
1999	Oct	FIRSTRAND	-3.11%
1999	Oct	FRONTRANGE SLTN.	-55.17%
1999	Oct	GIJIMA AST GROUP	28.56%
1999	Oct	INVESTEC	7.10%
1999	Nov	ADCORP	-53.03%
1999	Nov	AFRICAN BANK INVS.	-58.30%
1999	Nov	ASPEN PHMCR.	25.31%
1999	Nov	BARNARD JAC.MELLET	-70.38%
1999	Nov	BUSINESS CONNEXION GROUP	-41.22%
1999	Nov	DATACENTRIX	-57.73%
1999	Nov	DATATEC	-57.20%
1999	Nov	ENTER.OUTSC.	-38.06%
1999	Nov	FRONTRANGE SLTN.	-72.12%
1999	Nov	GIJIMA AST GROUP	-10.53%
1999	Nov	INVESTEC	-6.33%
1999	Dec	ADCORP	-34.80%
1999	Dec	AFRICAN BANK INVS.	-57.87%
1999	Dec	ASPEN PHMCR.	21.28%
1999	Dec	BARNARD JAC.MELLET	-72.20%
1999	Dec	BUSINESS CONNEXION GROUP	-44.38%
1999	Dec	ENTER.OUTSC.	-46.03%
1999	Dec	GIJIMA AST GROUP	-19.49%
2000	Jan	ADCORP	-43.93%
2000	Jan	AFLEASE GD.& UR.RES.	-27.46%
2000	Jan	AFRICAN BANK INVS.	-50.71%
2000	Jan	ASPEN PHMCR.	-13.12%
2000	Jan	BARNARD JAC.MELLET	-58.59%
2000	Jan	BUSINESS CONNEXION GROUP	-31.26%
2000	Jan	DATACENTRIX	-65.64%
2000	Jan	DATATEC	-60.25%
2000	Jan	ENTER.OUTSC.	-54.71%
2000	Jan	FIRSTRAND	1.76%
2000	Jan	FRONTRANGE SLTN.	-90.96%
2000	Jan	GIJIMA AST GROUP	-26.56%
2000	Jan	INVESTEC	8.52%
2000	Feb	ADCORP	-49.43%
2000	Feb	AFLEASE GD.& UR.RES.	-36.52%
2000	Feb	AFRICAN BANK INVS.	-46.79%

Appendix E.5. Companies selected by final loser filter

Continued.

Year	Month	Company	12-month Return
2000	Feb	ALLIED TECHNOLOGIES	67.83%
2000	Feb	ASPEN PHMCR.	-28.59%
2000	Feb	BARNARD JAC.MELLET	-68.44%
2000	Feb	BARPLATS INVS.	83.06%
2000	Feb	BUSINESS CONNEXION GROUP	-30.25%
2000	Feb	DATACENTRIX	-55.00%
2000	Feb	ENTER.OUTSC.	-50.38%
2000	Feb	FIRSTRAND	-2.28%
2000	Feb	GIJIMA AST GROUP	-34.12%
2000	Feb	IDION TECH.	-76.47%
2000	Feb	INVESTEC	0.92%
2000	Mar	ADCORP	-51.78%
2000	Mar	AFRICAN BANK INVS.	-45.05%
2000	Mar	ASPEN PHMCR.	-32.33%
2000	Mar	BARNARD JAC.MELLET	-73.19%
2000	Mar	BARPLATS INVS.	-2.36%
2000	Mar	COMAIR	-45.11%
2000	Mar	DATACENTRIX	-81.35%
2000	Mar	DIMENSION DATA HDG.(JSE)	-44.25%
2000	Mar	ENTER.OUTSC.	-34.19%
2000	Mar	ERP.COM	-90.00%
2000	Mar	FIRSTRAND	-4.98%
2000	Mar	FRONTRANGE SLTN.	-93.59%
2000	Mar	GIJIMA AST GROUP	-33.15%
2000	Mar	IDION TECH.	-90.97%
2000	Mar	INVESTEC	-21.67%
2000	Apr	ADCORP	-45.11%
2000	Apr	AFRICAN BANK INVS.	-40.27%
2000	Apr	ALEXANDER FORBES	8.13%
2000	Apr	ASPEN PHMCR.	-19.38%
2000	Apr	BARNARD JAC.MELLET	-70.38%
2000	Apr	BARPLATS INVS.	39.23%
2000	Apr	CERAMIC INDUSTRIES	40.49%
2000	Apr	DATACENTRIX	-44.82%
2000	Apr	DIMENSION DATA HDG.(JSE)	-16.29%
2000	Apr	DISCOVERY	-11.75%
2000	Apr	ENTER.OUTSC.	-49.94%
2000	Apr	ERP.COM	-90.00%
2000	Apr	FIRSTRAND	4.35%
2000	Apr	FRONTRANGE SLTN.	-90.96%
2000	Apr	GIJIMA AST GROUP	-15.22%
2000	Apr	IDION TECH.	-73.49%
2000	Apr	INVESTEC	-17.50%
2000	May	ADCORP	-28.64%
2000	May	AFRICAN BANK INVS.	-40.36%
2000	May	ALEXANDER FORBES	26.38%
2000	May	ASPEN PHMCR.	0.00%
2000	May	BARPLATS INVS.	110.06%
2000	May	CERAMIC INDUSTRIES	37.20%
2000	May	COMAIR	-39.61%
2000	May	DIMENSION DATA HDG.(JSE)	-22.37%
2000	May	DISCOVERY	1.83%
2000	May	ENTER.OUTSC.	-42.16%
2000	May	ERP.COM	-77.50%
2000	May	FIRSTRAND	17.93%
2000	May	FRONTRANGE SLTN.	-86.89%
2000	May	GIJIMA AST GROUP	-18.24%
2000	May	INVESTEC	4.35%
2000	Jun	ADCORP	-20.38%
2000	Jun	AFLEASE GD.& UR.RES.	-31.04%
2000	Jun	ALEXANDER FORBES	7.72%
2000	Jun	BARPLATS INVS.	106.20%
2000	Jun	CERAMIC INDUSTRIES	46.50%
2000	Jun	COMAIR	-36.58%
2000	Jun	DIMENSION DATA HDG.(JSE)	-45.10%
2000	Jun	ENTER.OUTSC.	-45.41%
2000	Jun	ERP.COM	-77.50%
2000	Jun	FIRSTRAND	25.09%
2000	Jun	FRONTRANGE SLTN.	-88.45%
2000	Jun	GIJIMA AST GROUP	-24.24%
2000	Jun	IDION TECH.	-89.47%
2000	Jun	INVESTEC	8.89%
2000	Jul	AFLEASE GD.& UR.RES.	-26.68%
2000	Jul	ALEXANDER FORBES	2.00%
2000	Jul	BARPLATS INVS.	75.19%
2000	Jul	CERAMIC INDUSTRIES	59.32%
2000	Jul	COMAIR	-29.83%
2000	Jul	ENTER.OUTSC.	-49.05%
2000	Jul	FRONTRANGE SLTN.	-88.95%
2000	Jul	GIJIMA AST GROUP	-25.24%
2000	Jul	IDION TECH.	-84.15%
2000	Jul	INVESTEC	-9.02%
2000	Aug	ADCORP	-20.53%
2000	Aug	AFLEASE GD.& UR.RES.	-5.41%
2000	Aug	BARPLATS INVS.	20.86%
2000	Aug	COMAIR	-31.96%
2000	Aug	ENTER.OUTSC.	-62.63%
2000	Aug	ERP.COM	-36.11%
2000	Aug	FRONTRANGE SLTN.	-87.03%
2000	Aug	GIJIMA AST GROUP	-20.26%
2000	Aug	IDION TECH.	-93.47%
2000	Aug	INVESTEC	-16.82%
2000	Sep	ADCORP	-28.86%
2000	Sep	ALEXANDER FORBES	-10.09%
2000	Sep	BARPLATS INVS.	-16.59%
2000	Sep	DIMENSION DATA HDG.(JSE)	-86.08%
2000	Sep	ENTER.OUTSC.	-60.59%
2000	Sep	ERP.COM	-48.72%
2000	Sep	FRONTRANGE SLTN.	-94.11%
2000	Sep	GIJIMA AST GROUP	-27.41%
2000	Sep	IDION TECH.	-95.47%
2000	Sep	INVESTEC	-26.72%
2000	Oct	ALEXANDER FORBES	-8.62%
2000	Oct	ENTER.OUTSC.	-37.48%
2000	Oct	ERP.COM	-50.00%
2000	Oct	FRONTRANGE SLTN.	-90.62%
2000	Oct	GIJIMA AST GROUP	-13.70%

Year	Month	Company	12-month Return
2000	Oct	IDION TECH.	-95.53%
2000	Oct	INVESTEC	-26.58%
2000	Nov	ALEXANDER FORBES	-1.39%
2000	Nov	ALLIED TECHNOLOGIES	9.18%
2000	Nov	GIJIMA AST GROUP	-12.58%
2000	Nov	INVESTEC	-21.66%
2000	Dec	ALEXANDER FORBES	-2.53%
2000	Dec	ALLIED TECHNOLOGIES	2.55%
2000	Dec	FIRSTRAND	-8.63%
2000	Dec	GIJIMA AST GROUP	-19.32%
2000	Dec	INVESTEC	-33.40%
2001	Jan	ALEXANDER FORBES	-8.24%
2001	Jan	ALLIED TECHNOLOGIES	-8.76%
2001	Jan	BARPLATS INVS.	-31.32%
2001	Jan	GIJIMA AST GROUP	-34.40%
2001	Feb	ALLIED TECHNOLOGIES	-10.17%
2001	Feb	BARPLATS INVS.	-26.66%
2001	Feb	GIJIMA AST GROUP	-57.23%
2001	Feb	INVESTEC	-43.13%
2001	Mar	ALEXANDER FORBES	-15.32%
2001	Mar	BARPLATS INVS.	23.78%
2001	Mar	GIJIMA AST GROUP	-58.53%
2001	Mar	INVESTEC	-31.16%
2001	Apr	ALEXANDER FORBES	-8.53%
2001	Apr	ALLIED TECHNOLOGIES	2.56%
2001	Apr	BARPLATS INVS.	-6.75%
2001	Apr	FIRSTRAND	-0.63%
2001	Apr	GIJIMA AST GROUP	-57.98%
2001	May	ALLIED TECHNOLOGIES	1.32%
2001	May	BARPLATS INVS.	12.92%
2001	May	CERAMIC INDUSTRIES	59.47%
2001	May	FIRSTRAND	-1.83%
2001	May	GIJIMA AST GROUP	-53.65%
2001	Jun	ALEXANDER FORBES	-5.63%
2001	Jun	DISCOVERY	-33.99%
2001	Jul	ALEXANDER FORBES	-7.22%
2001	Jul	ALLIED TECHNOLOGIES	-0.27%
2001	Jul	DISCOVERY	-39.83%
2001	Aug	ALEXANDER FORBES	-9.70%
2001	Aug	ALLIED TECHNOLOGIES	-6.42%
2001	Aug	DISCOVERY	-34.97%
2001	Sep	ALEXANDER FORBES	-11.30%
2001	Sep	ALLIED TECHNOLOGIES	4.06%
2001	Sep	DISCOVERY	-20.40%
2001	Oct	ALEXANDER FORBES	-5.77%
2001	Oct	ALLIED TECHNOLOGIES	16.32%
2001	Oct	DISCOVERY	-20.74%
2001	Nov	ALEXANDER FORBES	-6.92%
2001	Nov	ALLIED TECHNOLOGIES	15.86%
2001	Nov	DISCOVERY	-22.51%
2001	Dec	ALEXANDER FORBES	-9.29%
2001	Dec	ALLIED TECHNOLOGIES	14.73%
2001	Dec	CERAMIC INDUSTRIES	28.41%
2001	Dec	DISCOVERY	-7.50%
2002	Jan	ALEXANDER FORBES	-19.04%
2002	Jan	DELTA ELECT.INDS.	-6.36%
2002	Jan	DISCOVERY	-13.05%
2002	Feb	ALEXANDER FORBES	-19.93%
2002	Feb	CERAMIC INDUSTRIES	24.30%
2002	Feb	DELTA ELECT.INDS.	-4.09%
2002	Feb	DISCOVERY	-14.39%
2002	Mar	ALEXANDER FORBES	-19.38%
2002	Mar	DELTA ELECT.INDS.	-18.72%
2002	Mar	DISCOVERY	-26.61%
2002	Apr	ALEXANDER FORBES	-30.17%
2002	Apr	DELTA ELECT.INDS.	-16.97%
2002	Apr	DISCOVERY	-22.13%
2002	May	ALEXANDER FORBES	-28.54%
2002	May	DELTA ELECT.INDS.	-12.46%
2002	May	DISCOVERY	-7.91%
2002	Jun	CERAMIC INDUSTRIES	-2.86%
2002	Jun	DELTA ELECT.INDS.	-16.13%
2002	Jun	HARMONY GOLD MNG.	-27.74%
2002	Jul	CERAMIC INDUSTRIES	-12.46%
2002	Jul	DELTA ELECT.INDS.	-4.48%
2002	Aug	DELTA ELECT.INDS.	-8.90%
2002	Aug	HARMONY GOLD MNG.	-28.95%
2002	Sep	CERAMIC INDUSTRIES	-18.40%
2002	Sep	DELTA ELECT.INDS.	-5.98%
2002	Oct	CERAMIC INDUSTRIES	-14.77%
2002	Oct	DELTA ELECT.INDS.	-13.92%
2002	Oct	HARMONY GOLD MNG.	-19.57%
2002	Nov	AFLEASE GD.& UR.RES.	-14.16%
2002	Nov	DELTA ELECT.INDS.	-23.40%
2002	Dec	CERAMIC INDUSTRIES	-18.73%
2002	Dec	HARMONY GOLD MNG.	-24.38%
2003	Jan	CERAMIC INDUSTRIES	-17.28%
2003	Jan	HARMONY GOLD MNG.	-14.75%
2003	Feb	AFLEASE GD.& UR.RES.	-48.00%
2003	Feb	CERAMIC INDUSTRIES	-20.89%
2003	Mar	AFLEASE GD.& UR.RES.	-50.59%
2003	Apr	AFLEASE GD.& UR.RES.	-40.23%
2003	May	AFLEASE GD.& UR.RES.	-47.66%
2003	Jun	AFLEASE GD.& UR.RES.	-70.69%
2003	Jun	DISCOVERY	72.18%
2003	Jul	AFLEASE GD.& UR.RES.	-72.00%
2003	Aug	AFLEASE GD.& UR.RES.	-73.28%
2003	Sep	AFLEASE GD.& UR.RES.	-70.73%
2003	Sep	IDION TECH.	-30.41%
2003	Oct	AFLEASE GD.& UR.RES.	-63.97%
2003	Oct	IDION TECH.	-36.02%
2003	Nov	AFLEASE GD.& UR.RES.	-62.69%
2003	Nov	CORONATION FD.MGRS.	32.51%
2003	Nov	FRONTRANGE SLTN.	139.95%
2003	Dec	IDION TECH.	-14.48%

Appendix F

This appendix refers to Chapter 8: Out of Sample Testing

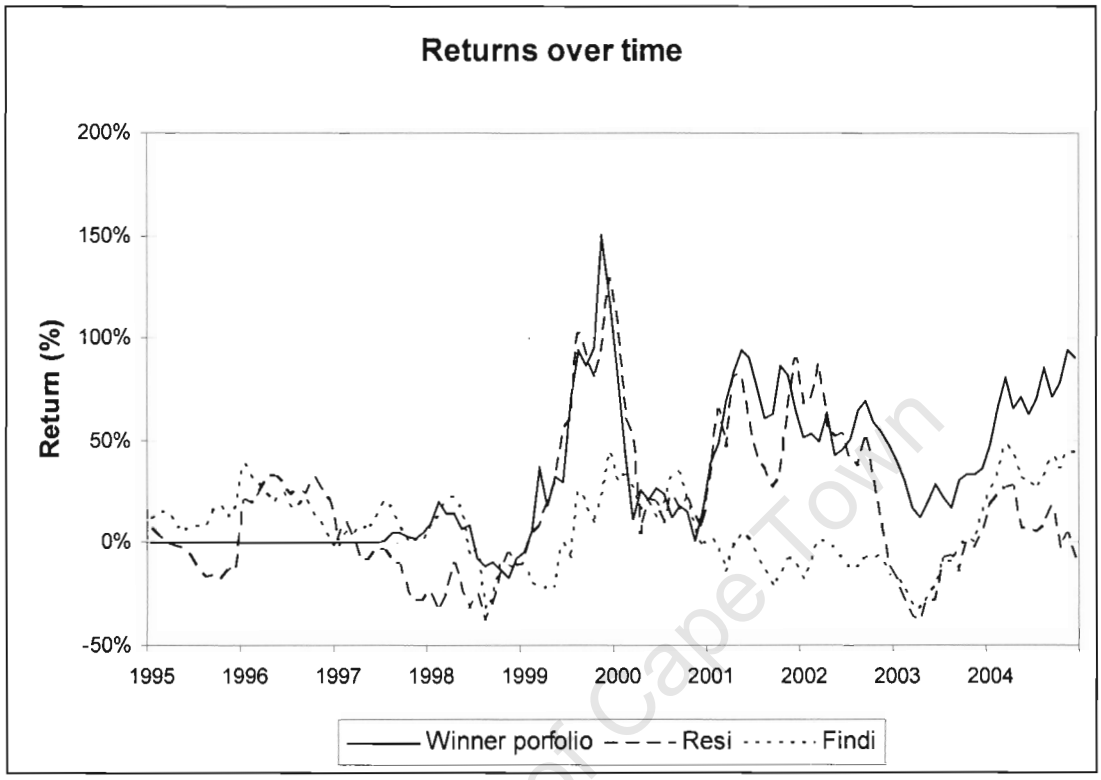
Appendix F.1. Companies selected by final winner filter

The table below lists all companies selected by the final winner filter combination from Chapter 6 when applied to the out of sample group of shares over the period from January 1995 until December 2004. Along with the names of the companies, the buy dates and resulting 12 month return is shown. The table is ranked by date.

Year	Month	Company	12-month Return
1997	Jul	PUTCO PROPERTIES	9.37%
1998	Jan	PUTCO PROPERTIES	-11.25%
1998	Mar	PUTCO PROPERTIES	-11.12%
1998	Apr	PUTCO PROPERTIES	2.69%
1998	May	PUTCO PROPERTIES	2.69%
1998	Nov	RANDGOLD & EXP.	64.09%
1998	Dec	RANDGOLD & EXP.	193.05%
1998	Dec	SABLE	180.27%
1999	Jan	SABLE	79.89%
1999	Feb	SABLE	79.89%
1999	Jun	MITTAL STEEL SA.	-25.61%
1999	Jun	MURRAY & ROBERTS	20.86%
1999	Jul	WESTERN AREAS	-16.87%
1999	Aug	MITTAL STEEL SA.	-13.14%
1999	Aug	PUTCO PROPERTIES	17.01%
1999	Aug	REUNERT	132.83%
1999	Aug	SYCOM PROPERTY FUND	41.31%
1999	Aug	WESTERN AREAS	-8.24%
1999	Sep	PUTCO PROPERTIES	14.19%
1999	Sep	SYCOM PROPERTY FUND	38.18%
1999	Sep	WESTERN AREAS	-29.22%
1999	Oct	PUTCO PROPERTIES	10.05%
1999	Oct	SYCOM PROPERTY FUND	41.32%
1999	Oct	WESTERN AREAS	-5.38%
1999	Nov	PUTCO PROPERTIES	6.16%
1999	Nov	SYCOM PROPERTY FUND	37.41%
1999	Dec	MITTAL STEEL SA.	-47.20%
1999	Dec	PUTCO PROPERTIES	-25.89%
1999	Dec	WESCO INVESTMENTS	6.35%
2000	Jan	MARTPROP PR.FUND	18.28%
2000	Jan	MITTAL STEEL SA.	-34.37%
2000	Jan	MURRAY & ROBERTS	-28.47%
2000	Jan	PRIMA PROPERTY TST.	47.41%
2000	Jan	PUTCO PROPERTIES	-7.06%
2000	Jan	SASOL	16.83%
2000	Jan	SOVEREIGN FOOD INVS.	24.78%
2000	Jan	WESCO INVESTMENTS	25.01%
2000	Feb	MARTPROP PR.FUND	21.69%
2000	Feb	MITTAL STEEL SA.	12.71%
2000	Feb	MURRAY & ROBERTS	7.14%
2000	Feb	PRIMA PROPERTY TST.	42.20%
2000	Feb	PUTCO PROPERTIES	0.20%
2000	Feb	TRENCOR	52.82%
2000	Feb	WESCO INVESTMENTS	55.70%
2000	Mar	MARTPROP PR.FUND	3.13%
2000	Mar	MITTAL STEEL SA.	24.58%
2000	Mar	MURRAY & ROBERTS	52.31%
2000	Mar	PRIMA PROPERTY TST.	47.07%
2000	Mar	PUTCO PROPERTIES	2.14%
2000	Mar	TRENCOR	60.06%
2000	Mar	WESCO INVESTMENTS	48.52%
2000	Mar	WINHOLD	45.95%
2000	Apr	MURRAY & ROBERTS	58.57%
2000	Apr	PRIMA PROPERTY TST.	51.11%
2000	Apr	PUTCO PROPERTIES	10.08%
2000	Apr	TRENCOR	104.39%
2000	Apr	WESCO INVESTMENTS	122.71%
2000	May	MITTAL STEEL SA.	72.71%
2000	May	MURRAY & ROBERTS	100.00%
2000	May	PRIMA PROPERTY TST.	32.02%
2000	May	PUTCO PROPERTIES	14.01%
2000	May	TRENCOR	104.48%
2000	May	WESCO INVESTMENTS	148.69%
2000	May	WINHOLD	18.27%
2000	Jun	TRENCOR	64.10%
2000	Jun	WESCO INVESTMENTS	156.93%
2000	Jun	WINHOLD	84.72%
2000	Jul	WESCO INVESTMENTS	164.25%
2000	Aug	WESCO INVESTMENTS	125.80%
2000	Sep	JOHNNIC	-50.39%
2000	Sep	NETWORK HLTHCR.	132.83%
2000	Sep	WESCO INVESTMENTS	131.25%
2000	Sep	WINHOLD	22.43%
2000	Oct	JOHNNIC	-40.50%
2000	Oct	NETWORK HLTHCR.	199.25%
2000	Oct	REUNERT	86.15%
2000	Oct	WESCO INVESTMENTS	115.56%
2000	Oct	WINHOLD	-15.77%
2000	Nov	NETWORK HLTHCR.	214.60%
2000	Nov	REUNERT	77.20%
2000	Nov	WESCO INVESTMENTS	112.84%
2000	Dec	NETWORK HLTHCR.	214.60%
2000	Dec	REUNERT	50.70%
2001	Jan	METAIR INVESTMENTS	40.30%
2001	Jan	NETWORK HLTHCR.	120.90%
2001	Jan	WINHOLD	19.95%
2001	Feb	METAIR INVESTMENTS	40.30%
2001	Feb	NETWORK HLTHCR.	128.83%
2001	Feb	REUNERT	35.64%
2001	Feb	SEKUNJALO INVS.	-42.88%
2001	Mar	METAIR INVESTMENTS	43.22%
2001	Mar	REUNERT	44.44%
2001	Mar	SCHARRIG MINING	32.69%
2001	Apr	METAIR INVESTMENTS	44.88%
2001	Apr	REUNERT	40.44%
2001	Apr	SCHARRIG MINING	23.36%
2001	May	METAIR INVESTMENTS	83.36%
2001	May	REUNERT	26.70%
2001	Jun	SABLE	45.17%
2001	Jun	TONGAAT HLT.GP.	22.01%
2001	Jun	WINHOLD	25.24%
2001	Jul	SABLE	71.91%
2001	Jul	TONGAAT HLT.GP.	13.53%
2001	Jul	WINHOLD	46.87%
2001	Aug	WINHOLD	118.14%
2001	Sep	WINHOLD	141.05%
2001	Oct	SABLE	79.98%
2001	Oct	SETPOINT TECH.	93.38%
2001	Oct	SOVEREIGN FOOD INVS.	-18.97%
2001	Nov	SABLE	84.54%
2001	Nov	SAPPI	14.70%
2001	Nov	SOVEREIGN FOOD INVS.	-23.31%
2001	Nov	SUPER GROUP	-32.36%
2001	Nov	WINHOLD	102.66%
2001	Dec	MUSTEK	56.87%
2001	Dec	SABLE	67.15%
2001	Dec	SAPPI	-2.32%
2001	Dec	SUPER GROUP	-29.59%
2001	Dec	TRANSPACO	280.02%
2001	Dec	WINHOLD	104.59%
2002	Jan	MUSTEK	54.16%
2002	Jan	SABLE	28.59%
2002	Jan	SAPPI	-7.59%
2002	Jan	TRANSPACO	190.12%
2002	Jan	WINHOLD	101.44%
2002	Feb	MOBILE INDUSTRIES	-17.51%
2002	Feb	MUSTEK	114.21%
2002	Feb	SABLE	7.14%
2002	Feb	WINHOLD	96.65%
2002	Mar	MOBILE INDUSTRIES	-7.74%
2002	Mar	MUSTEK	95.36%
2002	Mar	NU WORLD	14.68%
2002	Mar	SABLE	-2.05%
2002	Mar	TRENCOR	-9.98%
2002	Mar	WINHOLD	106.59%
2002	Apr	MOBILE INDUSTRIES	-20.05%
2002	Apr	MUSTEK	29.26%
2002	Apr	NU WORLD	-23.36%
2002	Apr	SABLE	-2.05%
2002	Apr	TRENCOR	-12.03%
2002	Apr	WINHOLD	75.85%
2002	May	MOBILE INDUSTRIES	4.18%
2002	May	MUSTEK	52.55%
2002	May	SABLE	-2.05%
2002	May	SETPOINT TECH.	-3.31%
2002	May	SOVEREIGN FOOD INVS.	-17.91%
2002	May	TRENCOR	-5.97%
2002	Jun	SABLE	14.27%
2002	Jun	SETPOINT TECH.	12.92%
2002	Jun	SOVEREIGN FOOD INVS.	-17.91%
2002	Jul	METOREX	-27.20%
2002	Jul	NU WORLD	6.66%
2002	Jul	SABLE	12.22%
2002	Jul	SETPOINT TECH.	37.16%
2002	Jul	SOVEREIGN FOOD INVS.	-33.33%
2002	Aug	METOREX	-16.45%
2002	Aug	NU WORLD	18.73%
2002	Aug	SABLE	-8.50%
2002	Aug	WINHOLD	23.94%
2002	Sep	METOREX	-19.56%
2002	Sep	NU WORLD	24.60%
2002	Sep	PRIMA PROPERTY TST.	45.19%
2002	Sep	SABLE	-23.58%
2002	Sep	WINHOLD	33.17%
2002	Oct	METOREX	-19.29%
2002	Oct	MICROMEGA HDG.	-61.02%
2002	Oct	NU WORLD	51.58%
2002	Oct	PRIMA PROPERTY TST.	34.41%
2002	Oct	SABLE	-24.14%
2002	Oct	UCS GROUP	54.55%
2002	Oct	WINHOLD	118.89%
2002	Nov	MICROMEGA HDG.	-45.45%
2002	Nov	OMNIA	25.98%
2002	Nov	PRIMA PROPERTY TST.	38.59%
2002	Nov	SABLE	-24.14%
2002	Nov	UCS GROUP	77.66%
2002	Nov	WINHOLD	143.47%
2002	Dec	MICROMEGA HDG.	-34.09%
2002	Dec	OMNIA	42.16%
2002	Dec	THE HOUSE OF BUSBY	42.26%
2002	Dec	UCS GROUP	132.56%
2002	Dec	WINHOLD	110.97%
2003	Jan	OMNIA	19.22%
2003	Jan	THE HOUSE OF BUSBY	55.10%
2003	Jan	UCS GROUP	66.06%
2003	Jan	WINHOLD	98.81%
2003	Feb	JD GROUP	111.25%
2003	Feb	METOREX	-13.22%
2003	Feb	MVELAPHANDA GROUP	23.36%
2003	Feb	NU WORLD	81.61%
2003	Feb	SUN INTERNATIONAL	54.33%
2003	Feb	THE HOUSE OF BUSBY	32.21%
2003	Feb	WINHOLD	129.10%
2003	Mar	JD GROUP	117.82%
2003	Mar	MVELAPHANDA GROUP	36.52%
2003	Mar	NU WORLD	137.03%
2003	Mar	THE HOUSE OF BUSBY	53.97%
2003	Mar	WINHOLD	99.88%
2003	Apr	JD GROUP	78.83%
2003	Apr	THE HOUSE OF BUSBY	62.50%
2003	Apr	WINHOLD	179.17%
2003	May	THE HOUSE OF BUSBY	81.06%
2003	Jun	NU WORLD	99.84%
2003	Jun	THE HOUSE OF BUSBY	72.51%
2003	Jun	UCS GROUP	113.92%
2003	Jul	KAP INTL.	-46.43%
2003	Jul	MICROMEGA HDG.	189.86%
2003	Jul	MOBILE INDUSTRIES 'N'	38.67%
2003	Jul	MVELAPHANDA GROUP	6.42%
2003	Aug	JD GROUP	48.62%
2003	Aug	KAP INTL.	-17.39%
2003	Aug	LA GROUP	202.41%
2003	Aug	LA GROUP 'N'	150.78%
2003	Aug	MICROMEGA HDG.	198.55%
2003	Aug	MOBILE INDUSTRIES	21.77%
2003	Aug	MOBILE INDUSTRIES 'N'	25.35%
2003	Aug	MVELAPHANDA GROUP	12.17%
2003	Aug	NU WORLD	85.33%
2003	Aug	SETPOINT TECH	26.12%
2003	Aug	THE HOUSE OF BUSBY	49.50%
2003	Aug	UCS GROUP	79.73%
2003	Sep	JD GROUP	77.75%
2003	Sep	KAP INTL.	-21.74%
2003	Sep	METOREX	-15.78%
2003	Sep	MICROMEGA HDG.	365.22%
2003	Sep	MOBILE INDUSTRIES	17.70%
2003	Sep	MOBILE INDUSTRIES 'N	17.66%
2003	Sep	MVELAPHANDA GROUP	31.41%
2003	Sep	NU WORLD	92.67%
2003	Sep	PARACON	73.90%
2003	Sep	PHUMELELA GMG.& LEIS.	89.70%
2003	Sep	SETPOINT TECH.	50.46%
2003	Sep	THE HOUSE OF BUSBY	94.15%
2003	Oct	KAP INTL.	-54.55%
2003	Oct	M CUBED HOLD NGS	35.89%
2003	Oct	MOBILE INDUSTRIES	3.19%
2003	Oct	MOBILE INDUSTRIES 'N'	-1.11%
2003	Oct	MVELAPHANDA GROUP	31.07%
2003	Oct	NU WORLD	74.46%
2003	Oct	PHUMELELA GMG.& LEIS.	81.16%
2003	Oct	THE HOUSE OF BUSBY	115.36%
2003	Nov	KAP INTL.	16.67%
2003	Nov	MOBILE INDUSTRIES 'N'	11.03%
2003	Nov	MVELAPHANDA GROUP	35.47%
2003	Nov	NU WORLD	87.85%
2003	Nov	PHUMELELA GMG.& LEIS.	105.61%
2003	Nov	SETPOINT TECH.	92.13%
2003	Nov	THE HOUSE OF BUSBY	108.44%
2003	Nov	VALUE GROUP	88.78%
2003	Dec	LA GROUP	169.45%
2003	Dec	LA GROUP 'N'	240.11%
2003	Dec	PHUMELELA GMG.& LEIS.	135.20%
2003	Dec	THE HOUSE OF BUSBY	108.88%
2003	Dec	WINHOLD	120.35%

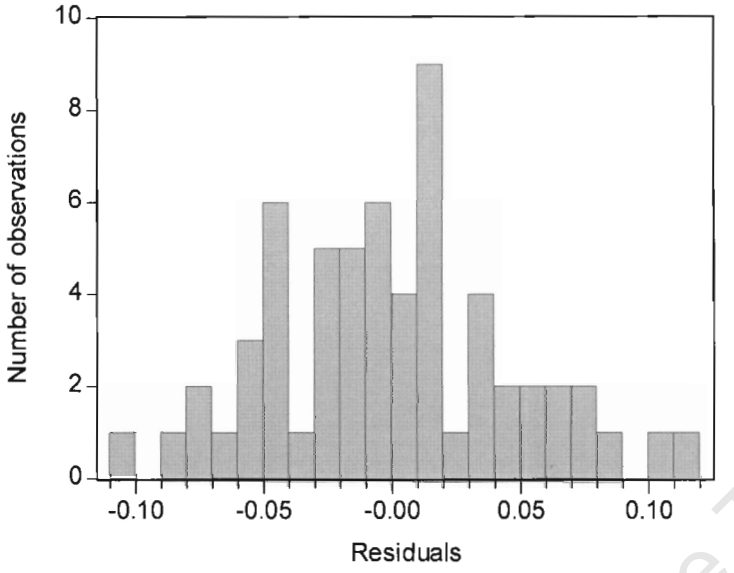
Appendix F.2. Winner portfolio average returns over time

The figure graphs the equally weighted average return over a rolling 12 month period earned by the winner portfolio in each year of the sample from 1995 until 2004. On the same axes, the graph also shows the corresponding returns of the Resources index and the Financial-industrial index.



Appendix F.3. Normality of residuals for two-factor APT: winner portfolio

The output below shows the histogram and summary statistics for the residuals of the regression of the excess returns on the winner portfolio against the excess returns on the Findi and the Resi over the period from January 2000 until December 2004.

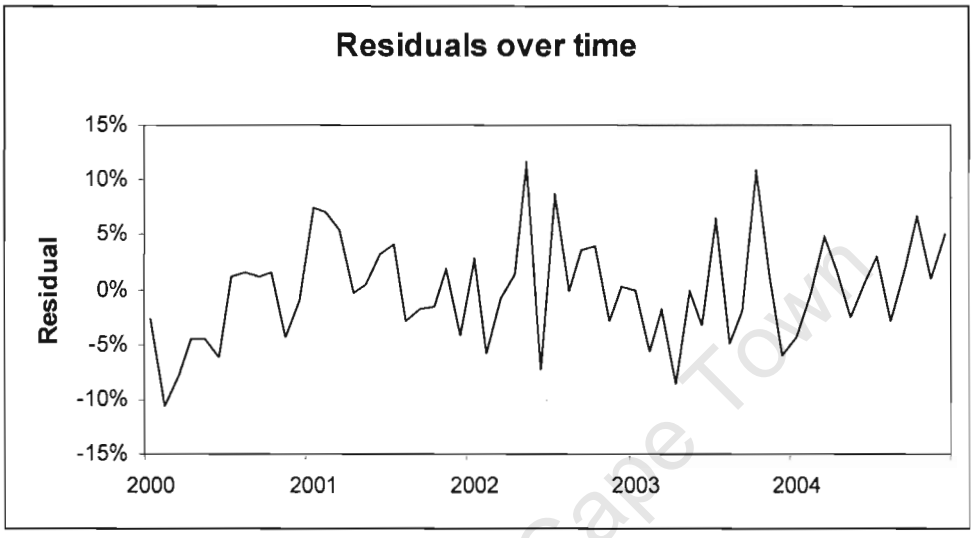


Observations 60	
Mean	3.70e-18
Median	-0.001119
Maximum	0.117060
Minimum	-0.105879
Std. Dev.	0.047257
Skewness	0.240799
Kurtosis	2.883549
Jarque-Bera	0.613744
Probability	0.735745

Appendix F.5. Autocorrelation of residuals for two-factor APT: winner portfolio

The output below contains two outputs testing whether the residuals of the regression of the excess returns on the winner portfolio against the excess returns on the Findi and the Resi over the period from January 2000 until December 2004 are autocorrelated. Panel A graphs these residuals over time. Panel B displays the output from the Ljung-Box test for autocorrelation: the first column (m) is the lag length, the second column is the LB-statistic and the third column is the corresponding p-value.

Panel A: Residuals over time

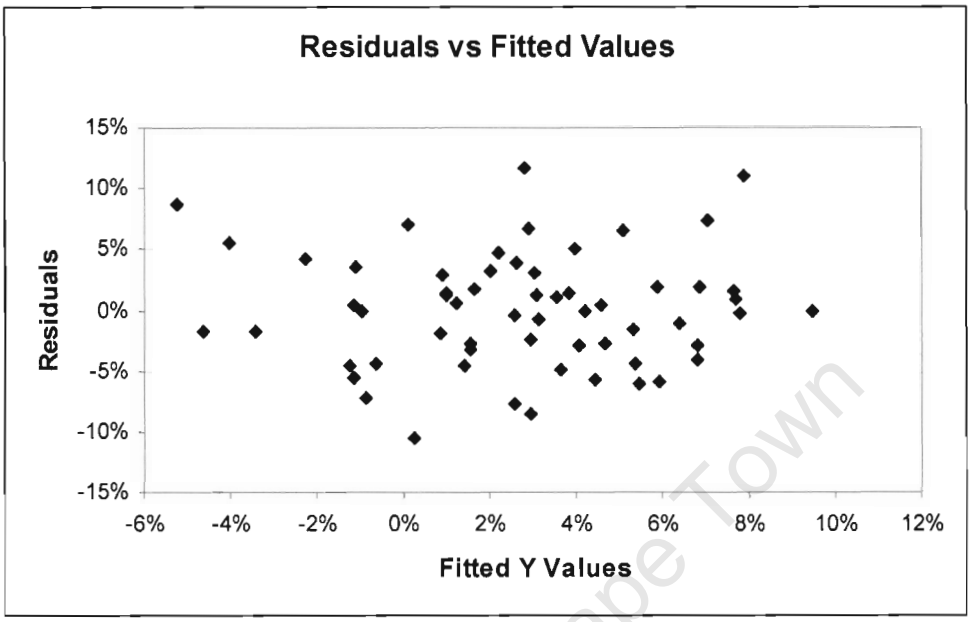


Panel B: Output of Ljung-Box test for autocorrelation

m	LB-Stat	Prob
1	0	1
2	0	1
3	0	1
4	0	1
5	0	1
6	0	1
7	0	1
8	0	1
9	0	1
10	0	1
11	0	1
12	0	1
13	0	1
14	0	1
15	0	1
16	0	1
17	0	1
18	0	1
19	0	1
20	0	1
21	0	1
22	0	1
23	0	1
24	0	1
25	0	1
26	0	1
27	0	1
28	0	1

Appendix F.5. Heteroscedasticity of residuals for two-factor APT: winner portfolio

The output below tests whether the residuals of the regression of the excess returns on the winner portfolio against the excess returns on the Findi and the Resi over the period from January 2000 until December 2004 are heteroscedastic. These residuals are graphed against estimated Y values from the regression.



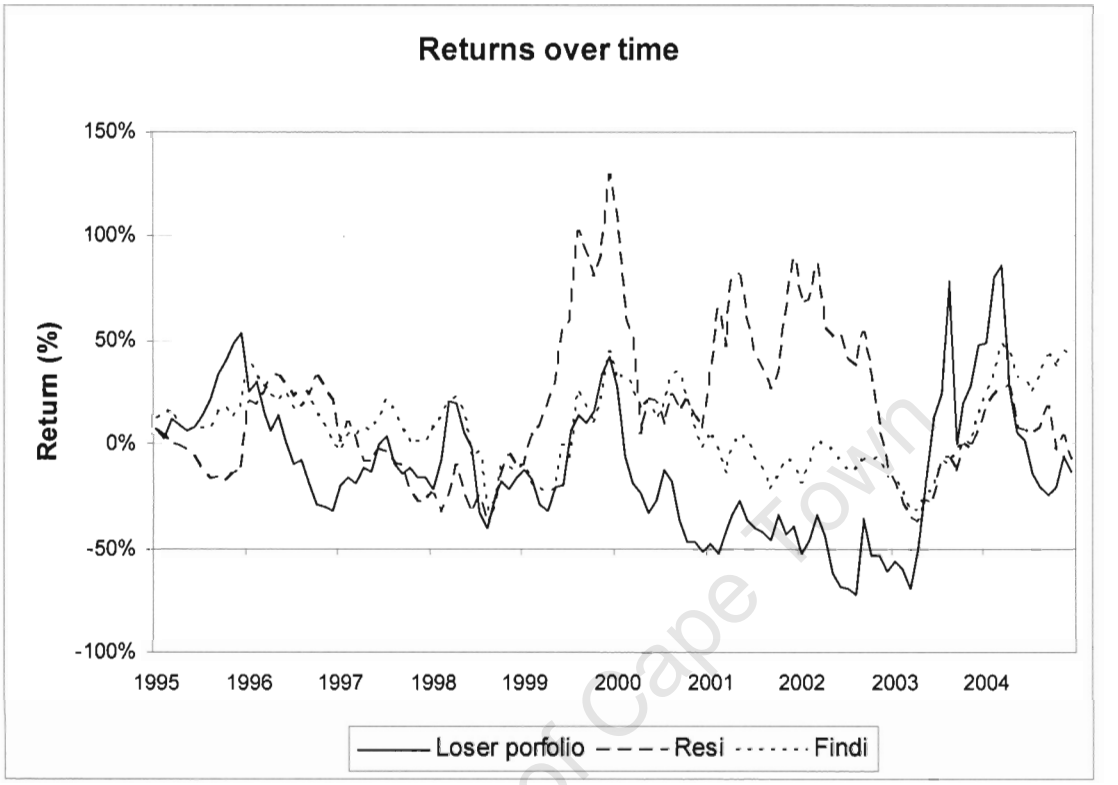
Appendix F.6. Companies selected by final loser filter

The table below lists all companies selected by the final loser filter combination from Chapter 7 when applied to the out of sample group of shares over the period from January 1995 until December 2004. Along with the names of the companies, the buy dates and resulting 12 month return is shown. The table is ranked by date.

Year	Month	Company	12-month Return
1995	Jan	JOHNNIC	44.11%
1995	Jan	SUN INTERNATIONAL	33.95%
1995	Jan	TRENCOR	18.83%
1995	Feb	JOHNNIC	18.31%
1995	Feb	SUN INTERNATIONAL	22.67%
1995	Feb	TRENCOR	33.23%
1995	Mar	JOHNNIC	45.43%
1995	Mar	TRENCOR	19.94%
1995	Apr	JOHNNIC	10.23%
1995	Apr	TRENCOR	43.61%
1995	May	JOHNNIC	36.82%
1995	May	TRENCOR	35.22%
1995	Jun	JOHNNIC	43.26%
1995	Sep	JOHNNIC	27.12%
1995	Sep	PRETORIA POR.CMT.	-13.21%
1995	Oct	JOHNNIC	15.79%
1995	Oct	PRETORIA POR.CMT.	-28.46%
1995	Nov	JOHNNIC	11.02%
1995	Nov	PRETORIA POR.CMT.	-33.78%
1995	Dec	PRETORIA POR.CMT.	-34.73%
1996	Feb	JOHNNIC	10.71%
1996	Feb	PRETORIA POR.CMT.	-12.14%
1996	Feb	SUN INTERNATIONAL	-14.95%
1996	Mar	JOHNNIC	7.01%
1996	Mar	PRETORIA POR.CMT.	-10.23%
1996	Mar	SUN INTERNATIONAL	-15.27%
1996	Apr	JOHNNIC	25.20%
1996	Apr	PRETORIA POR.CMT.	-13.41%
1996	Apr	SUN INTERNATIONAL	-21.41%
1996	May	JOHNNIC	8.56%
1996	May	PRETORIA POR.CMT.	-11.13%
1996	May	SUN INTERNATIONAL	-21.78%
1996	Jun	PRETORIA POR.CMT.	-9.71%
1996	Jun	SUN INTERNATIONAL	-25.77%
1996	Jul	PRETORIA POR.CMT.	22.38%
1996	Aug	PRETORIA POR.CMT.	30.04%
1996	Aug	STANDARD BK.GP.	24.17%
1996	Oct	STANDARD BK.GP.	15.67%
1996	Nov	STANDARD BK.GP.	25.42%
1996	Dec	STANDARD BK.GP.	19.24%
1997	Mar	NASPERS	-9.44%
1997	Apr	MTN GROUP	114.04%
1997	Apr	NASPERS	14.71%
1997	Apr	RANDGOLD & EXP.	-73.93%
1997	May	NASPERS	9.34%
1997	May	RANDGOLD & EXP.	-82.14%
1997	Jun	JOHNNIC	-12.10%
1997	Jun	MTN GROUP	67.20%
1997	Jul	STANDARD BK.GP.	9.91%
1997	Aug	NASPERS	-51.68%
1997	Aug	RMB	-36.13%
1997	Aug	STANDARD BK.GP.	-34.42%
1997	Sep	MTN GROUP	-1.18%
1997	Sep	NASPERS	-82.50%
1997	Sep	REAL AFRICA	103.80%
1997	Oct	MTN GROUP	37.70%
1997	Oct	NASPERS	-53.14%
1997	Oct	REAL AFRICA	93.94%
1997	Nov	MTN GROUP	20.60%
1997	Nov	NASPERS	-47.25%
1997	Nov	RMB	-21.58%
1997	Nov	STANDARD BK.GP.	-31.65%
1997	Dec	MTN GROUP	24.46%
1997	Dec	NASPERS	-42.22%
1997	Dec	RMB	-27.32%
1997	Dec	STANDARD BK.GP.	-14.14%
1998	Jan	NASPERS	-39.00%
1998	Jan	REAL AFRICA	43.00%
1998	Feb	NASPERS	-28.93%
1998	Mar	RMB	-47.80%
1998	Apr	RMB	-38.40%
1998	Apr	STANDARD BK.GP.	-36.47%
1998	May	MTN GROUP	-9.29%
1998	May	RMB	-40.23%
1998	May	STANDARD BK.GP.	-32.82%
1998	Jun	ITALTILE	3.18%
1998	Jun	LA GROUP	-41.43%
1998	Jun	LA GROUP 'N'	-34.27%
1998	Jun	MTN GROUP	8.74%
1998	Jun	PRIMEDIA	-74.01%
1998	Jun	PRIMEDIA 'N'	-74.60%
1998	Jun	REAL AFRICA	-41.75%
1998	Jun	RMB	-21.97%
1998	Jun	THE HOUSE OF BUSBY	-54.98%
1998	Jul	ITALTILE	1.97%
1998	Jul	LA GROUP	-37.50%
1998	Jul	LA GROUP 'N'	-22.79%
1998	Jul	RMB	-28.21%
1998	Jul	THE HOUSE OF BUSBY	-47.17%
1998	Aug	ITALTILE	27.37%
1998	Aug	LA GROUP	-10.71%
1998	Aug	LA GROUP 'N'	-23.32%
1998	Aug	MTN GROUP	100.84%
1998	Aug	MVELAPHANDA GROUP	24.87%
1998	Aug	NU WORLD	-58.90%
1998	Sep	ITALTILE	41.22%
1998	Sep	LA GROUP 'N'	4.99%
1998	Sep	MTN GROUP	59.69%
1998	Sep	MVELAPHANDA GROUP	-16.84%
1998	Sep	REAL AFRICA	-67.62%
1998	Oct	ITALTILE	51.05%
1998	Oct	LA GROUP	-8.09%
1998	Oct	MTN GROUP	42.14%
1998	Oct	MVELAPHANDA GROUP	-13.00%
1998	Oct	NU WORLD	-52.00%
1998	Oct	REAL AFRICA	-58.42%
1998	Nov	LA GROUP	-25.22%
1998	Nov	MTN GROUP	119.61%
1998	Nov	MVELAPHANDA GROUP	-7.41%
1998	Nov	PEREGRINE	-43.59%
1998	Nov	REAL AFRICA	-55.82%
1998	Dec	LA GROUP	-10.71%
1998	Dec	MTN GROUP	208.77%
1998	Dec	MVELAPHANDA GROUP	9.19%
1998	Dec	PEREGRINE	-52.90%
1998	Dec	UCS GROUP	103.20%
1999	Jan	LA GROUP	-19.99%
1999	Jan	MTN GROUP	280.89%
1999	Jan	MVELAPHANDA GROUP	18.02%
1999	Jan	PEREGRINE	-38.82%
1999	Feb	LA GROUP	-18.04%
1999	Feb	MTN GROUP	322.08%
1999	Feb	MVELAPHANDA GROUP	-13.11%
1999	Feb	PEREGRINE	-51.13%
1999	Mar	ITALTILE	72.74%
1999	Mar	LA GROUP	-46.74%
1999	Mar	LA GROUP 'N'	-37.75%
1999	Mar	MVELAPHANDA GROUP	-19.42%
1999	Apr	ITALTILE	56.69%
1999	Apr	LA GROUP	-48.82%
1999	Apr	LA GROUP 'N'	-47.16%
1999	Apr	MVELAPHANDA GROUP	-26.80%
1999	Apr	PEREGRINE	-70.75%
1999	May	ITALTILE	55.65%
1999	May	LA GROUP	-77.82%
1999	May	LA GROUP 'N'	-72.61%
1999	May	MVELAPHANDA GROUP	-19.72%
1999	May	PEREGRINE	-65.96%
1999	May	UCS GROUP	-51.74%
1999	Jun	LA GROUP	-78.14%
1999	Jun	LA GROUP 'N'	-75.70%
1999	Jun	MVELAPHANDA GROUP	-17.13%
1999	Jun	PEREGRINE	-62.10%
1999	Jun	TOURISM INV.	-80.15%
1999	Jun	UCS GROUP	-41.33%
1999	Jul	LA GROUP	-76.77%
1999	Jul	LA GROUP 'N'	-75.51%
1999	Jul	MVELAPHANDA GROUP	-14.95%
1999	Jul	PEREGRINE	-44.65%
1999	Jul	TOURISM INV.	-74.27%
1999	Jul	UCS GROUP	-40.00%
1999	Aug	MVELAPHANDA GROUP	4.17%
1999	Aug	PARACON	7.69%
1999	Aug	PEREGRINE	-38.29%
1999	Aug	TOURISM INV.	-67.01%
1999	Aug	UCS GROUP	-34.00%
1999	Sep	MVELAPHANDA GROUP	13.94%
1999	Sep	PARACON	19.23%
1999	Sep	PEREGRINE	-32.32%
1999	Sep	TOURISM INV.	-72.55%
1999	Sep	UCS GROUP	-46.00%
1999	Oct	MVELAPHANDA GROUP	-9.69%
1999	Oct	PARACON	-9.09%
1999	Oct	PEREGRINE	-42.10%
1999	Oct	TOURISM INV.	-77.45%
1999	Oct	UCS GROUP	-68.95%
1999	Nov	MVELAPHANDA GROUP	-20.40%
1999	Nov	PARACON	5.22%
1999	Nov	PEREGRINE	-57.17%
1999	Nov	TOURISM INV.	-74.95%
1999	Nov	UCS GROUP	-67.83%
1999	Dec	MERAFE RESOURCES	43.08%
1999	Dec	MICROMEGA HDG.	-4.22%
1999	Dec	MVELAPHANDA GROUP	-26.81%
1999	Dec	PARACON	0.00%
1999	Dec	PEREGRINE	-53.77%
1999	Dec	TOURISM INV.	-67.12%
2000	Jan	MVELAPHANDA GROUP	-35.29%
2000	Jan	PARACON	-28.57%
2000	Jan	PEREGRINE	-65.47%
2000	Jan	TOURISM INV.	-60.94%
2000	Feb	MVELAPHANDA GROUP	-32.48%
2000	Feb	PARACON	-27.33%
2000	Feb	PEREGRINE	-61.00%
2000	Feb	TOURISM INV.	-54.69%
2000	Feb	UCS GROUP	-70.91%
2000	Mar	JOHNNIC	-41.52%
2000	Mar	MICROMEGA HDG.	-49.88%
2000	Mar	MVELAPHANDA GROUP	-55.02%
2000	Mar	PARACON	-51.72%
2000	Mar	PEREGRINE	-64.83%
2000	Mar	UCS GROUP	-68.96%
2000	Apr	JOHNNIC	-32.96%
2000	Apr	MICROMEGA HDG.	-30.47%
2000	Apr	MVELAPHANDA GROUP	-39.22%
2000	Apr	PARACON	-22.77%
2000	Apr	PEREGRINE	-55.05%
2000	Apr	UCS GROUP	-68.33%
2000	May	JOHNNIC	-21.27%
2000	May	MICROMEGA HDG.	-11.21%
2000	May	MVELAPHANDA GROUP	-49.03%
2000	May	PARACON	-27.27%
2000	May	PEREGRINE	-53.03%
2000	Jun	JOHNNIC	-35.36%
2000	Jun	MICROMEGA HDG.	-27.30%
2000	Jun	PARACON	-50.00%
2000	Jun	PEREGRINE	-51.24%
2000	Jun	UCS GROUP	-48.82%
2000	Jul	JOHNNIC	-51.77%
2000	Jul	MICROMEGA HDG.	-22.62%
2000	Jul	PARACON	-52.00%
2000	Jul	PEREGRINE	-60.88%
2000	Jul	PRISM	-56.85%
2000	Jul	UCS GROUP	-49.96%
2000	Aug	JOHNNIC	-46.24%
2000	Aug	MICROMEGA HDG.	-12.66%
2000	Aug	PARACON	-59.29%
2000	Aug	PEREGRINE	-53.35%
2000	Aug	PRISM	-56.43%
2000	Aug	UCS GROUP	-52.61%
2000	Sep	JOHNNIC	-50.39%
2000	Sep	M CUBED HOLDINGS	-11.42%
2000	Sep	MICROMEGA HDG.	-24.37%
2000	Sep	PARACON	-69.03%
2000	Sep	PEREGRINE	-42.04%
2000	Sep	PRISM	-65.71%
2000	Sep	SPESCOM	-22.29%
2000	Oct	JOHNNIC	-40.50%
2000	Oct	M CUBED HOLDINGS	-42.96%
2000	Oct	MICROMEGA HDG.	-37.50%
2000	Oct	PARACON	-60.83%
2000	Oct	PRISM	-84.99%
2000	Nov	M CUBED HOLDINGS	-32.62%
2000	Nov	MICROMEGA HDG.	-14.99%
2000	Nov	PARACON	-53.19%
2000	Nov	PRISM	-72.34%
2000	Dec	JOHNNIC	-44.81%
2000	Dec	M CUBED HOLDINGS	-33.69%
2000	Dec	MICROMEGA HDG.	-31.50%
2000	Dec	PARACON	-53.08%
2000	Dec	PRISM	-82.92%
2000	Dec	RANDGOLD & EXP.	107.75%
2001	Jan	JOHNNIC	-46.27%
2001	Jan	M CUBED HOLDINGS	-33.75%
2001	Jan	MERAFE RESOURCES	54.00%
2001	Jan	MICROMEGA HDG.	-26.86%
2001	Jan	PARACON	-48.00%
2001	Jan	PRISM	-86.25%
2001	Feb	JOHNNIC	-38.23%
2001	Feb	KAGISO MEDIA	95.81%
2001	Feb	M CUBED HOLDINGS	-44.47%
2001	Feb	MICROMEGA HDG.	-10.35%
2001	Feb	PARACON	-52.00%
2001	Feb	PRISM	-90.44%
2001	Mar	MICROMEGA HDG.	-8.09%
2001	Apr	MICROMEGA HDG.	-21.45%
2001	May	MICROMEGA HDG.	-61.17%
2001	May	PRISM	-78.58%
2001	Jun	MICROMEGA HDG.	-73.24%
2001	Jun	SPUR	-32.98%
2001	Jun	TRUWORTHS INTL.	21.79%
2001	Jul	MICROMEGA HDG.	-77.40%
2001	Aug	SPUR	-27.33%
2002	Mar	MERAFE RESOURCES	-40.17%
2002	Apr	MERAFE RESOURCES	-43.27%
2002	May	MERAFE RESOURCES	-38.88%
2002	Jun	MERAFE RESOURCES	-39.06%
2002	Jul	MERAFE RESOURCES	-26.26%
2002	Aug	MERAFE RESOURCES	-6.46%
2002	Sep	MERAFE RESOURCES	-16.86%
2002	Oct	MERAFE RESOURCES	-19.32%
2002	Nov	MERAFE RESOURCES	-20.46%
2002	Dec	MERAFE RESOURCES	-21.07%
2002	Dec	TOURISM INV.	-0.53%
2003	Jan	ITALTILE	18.19%
2003	Jan	MERAFE RESOURCES	-8.15%
2003	Jan	TOURISM INV.	-7.97%
2003	Feb	MERAFE RESOURCES	9.77%
2003	Feb	TOURISM INV.	-9.90%
2003	Mar	ITALTILE	26.29%
2003	Apr	ITALTILE	37.16%
2003	May	ITALTILE	41.36%
2003	Jun	ITALTILE	31.94%
2003	Jul	TOURISM INV.	-7.69%
2003	Aug	SAGE GROUP	-30.83%
2003	Sep	SAGE GROUP	-23.49%
2003	Oct	SAGE GROUP	-28.39%
2003	Nov	SAGE GROUP	-12.70%

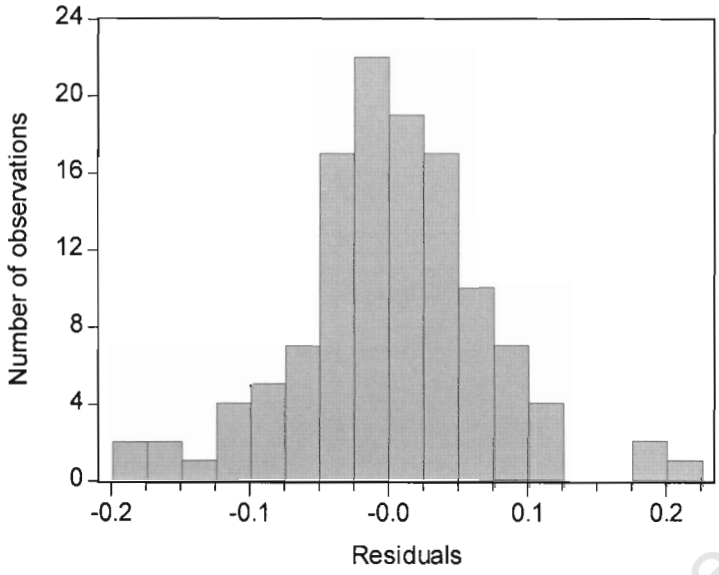
Appendix F.7. Loser portfolio average returns over time

The figure graphs the equally weighted average return over a rolling 12 month period earned by the loser portfolio in each year of the sample from 1995 until 2004. On the same axes, the graph also shows the corresponding returns of the Resources index and the Financial-industrial index.



Appendix F.8. Normality of residuals for two-factor APT: loser portfolio

The output below shows the histogram and summary statistics for the residuals of the regression of the excess returns on the loser portfolio against the excess returns on the Findi and the Resi over the period from January 1995 until December 2004.

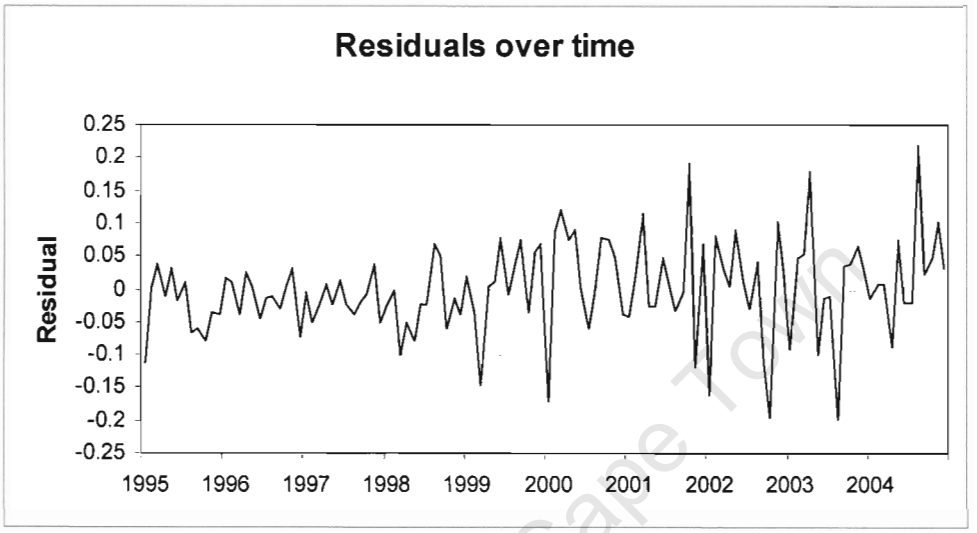


Observations 120	
Mean	-2.54e-18
Median	-0.001401
Maximum	0.220821
Minimum	-0.198599
Std. Dev.	0.069714
Skewness	-0.041206
Kurtosis	4.273766
Jarque-Bera	8.146359
Probability	0.017023

Appendix F.9. Autocorrelation of residuals for two-factor APT: loser portfolio

The output below contains two outputs testing whether the residuals of the regression of the excess returns on the loser portfolio against the excess returns on the Findi and the Resi over the period from January 1995 until December 2004 are autocorrelated. Panel A graphs these residuals over time. Panel B displays the output from the Ljung-Box test for autocorrelation: the first column (m) is the lag length, the second column is the LB-statistic and the third column is the corresponding p-value.

Panel A: Residuals over time



Panel B: Output of Ljung-Box test for autocorrelation

m	LB-Stat	Prob
1	0	1
2	0	1
3	0	1
4	0	1
5	0	1
6	0	1
7	0	1
8	0	1
9	0	1
10	0	1
11	0	1
12	0	1
13	0	1
14	0	1
15	0	1
16	0	1
17	0	1
18	0	1
19	0	1
20	0	1
21	0	1
22	0	1
23	0	1
24	0	1
25	0	1
26	0	1
27	0	1
28	0	1

Appendix F.10. Heteroscedasticity of residuals for two-factor APT: loser portfolio

The output below tests whether the residuals of the regression of the excess returns on the loser portfolio against the excess returns on the Findi and the Resi over the period from January 1995 until December 2004 are heteroscedastic. These residuals are graphed against estimated Y values from the regression.